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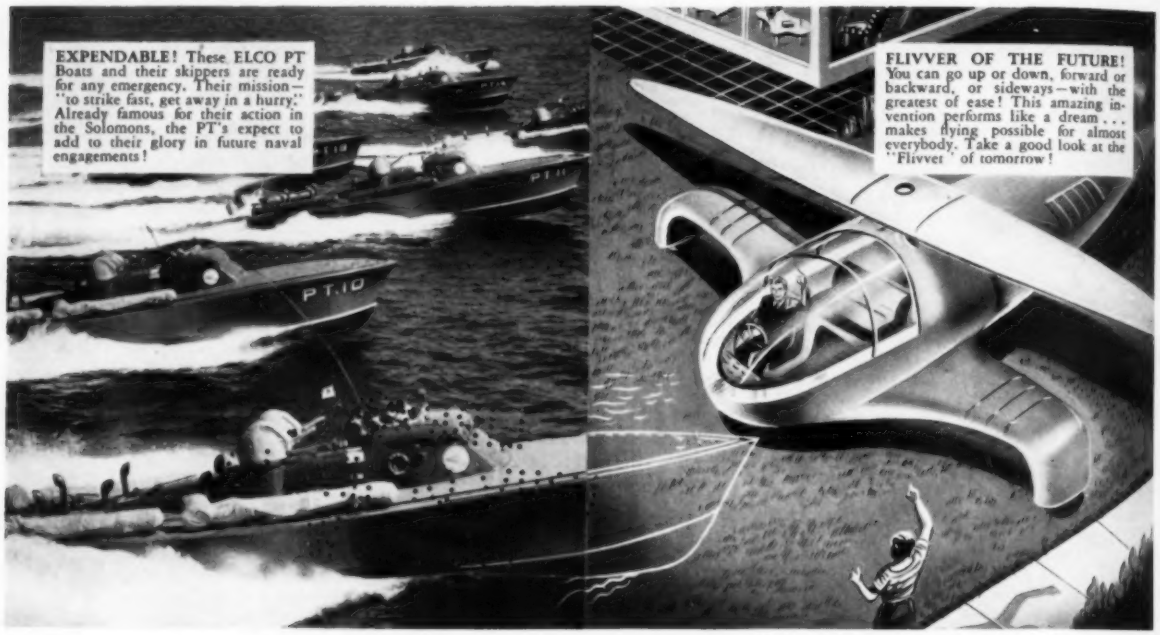

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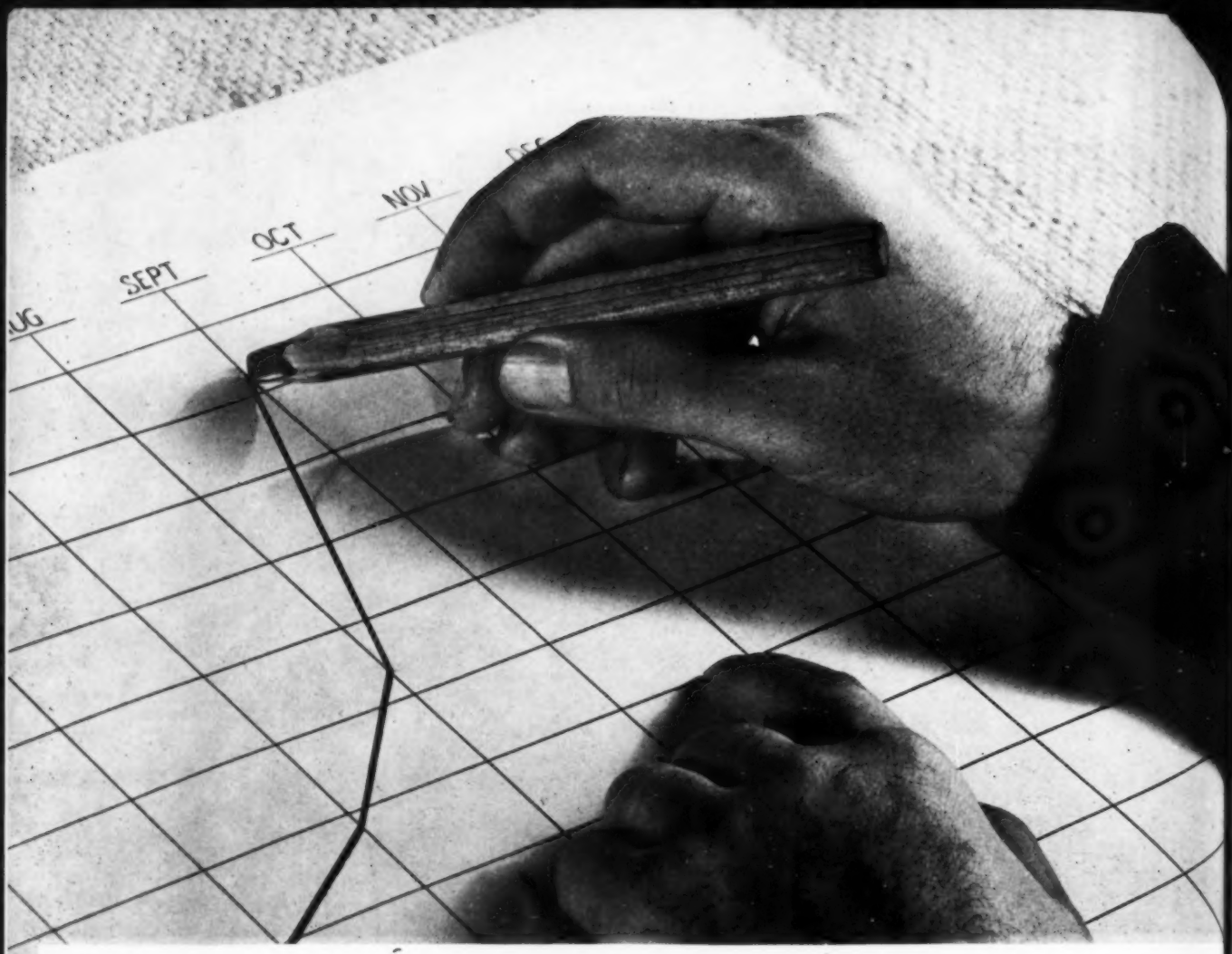

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Volume XIX Number 10

SOAP and SANITARY CHEMICALS

Reg. U. S. Pat. Office

OCTOBER
1943

SANITARY Products Section, which forms a part of every issue of SOAP, Begins on page 79.

MEMBER AUDIT BUREAU OF CIRCULATIONS

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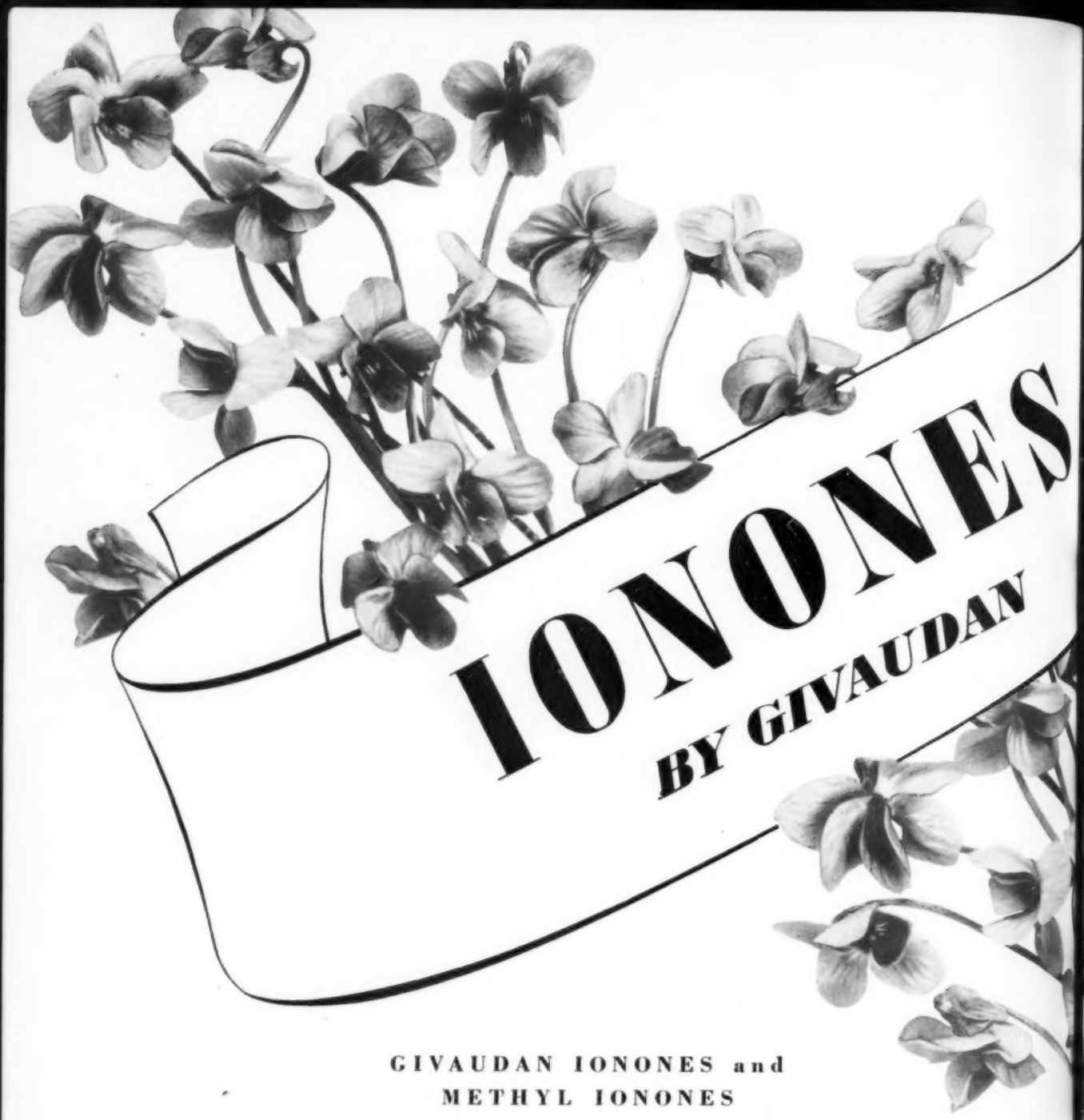

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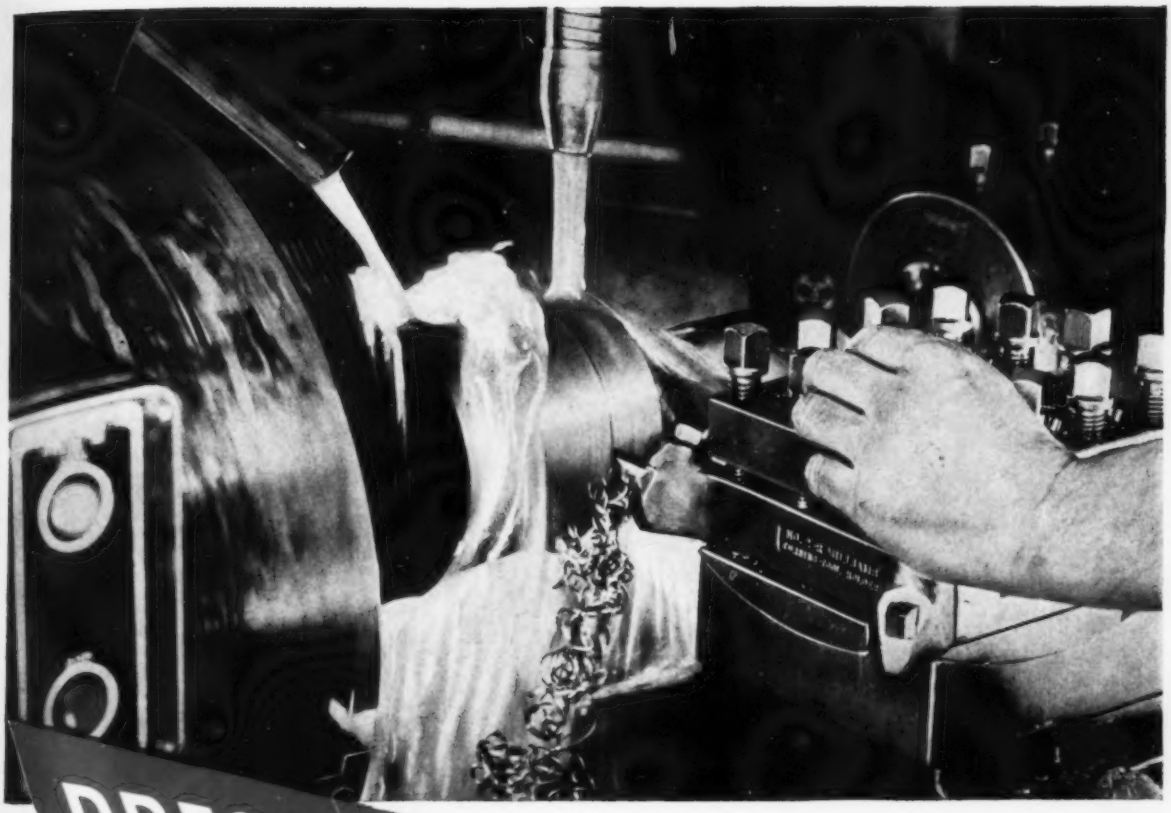

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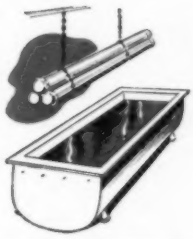

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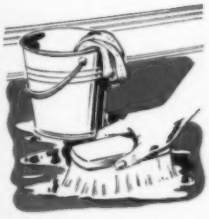

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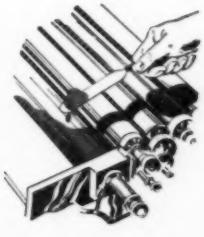

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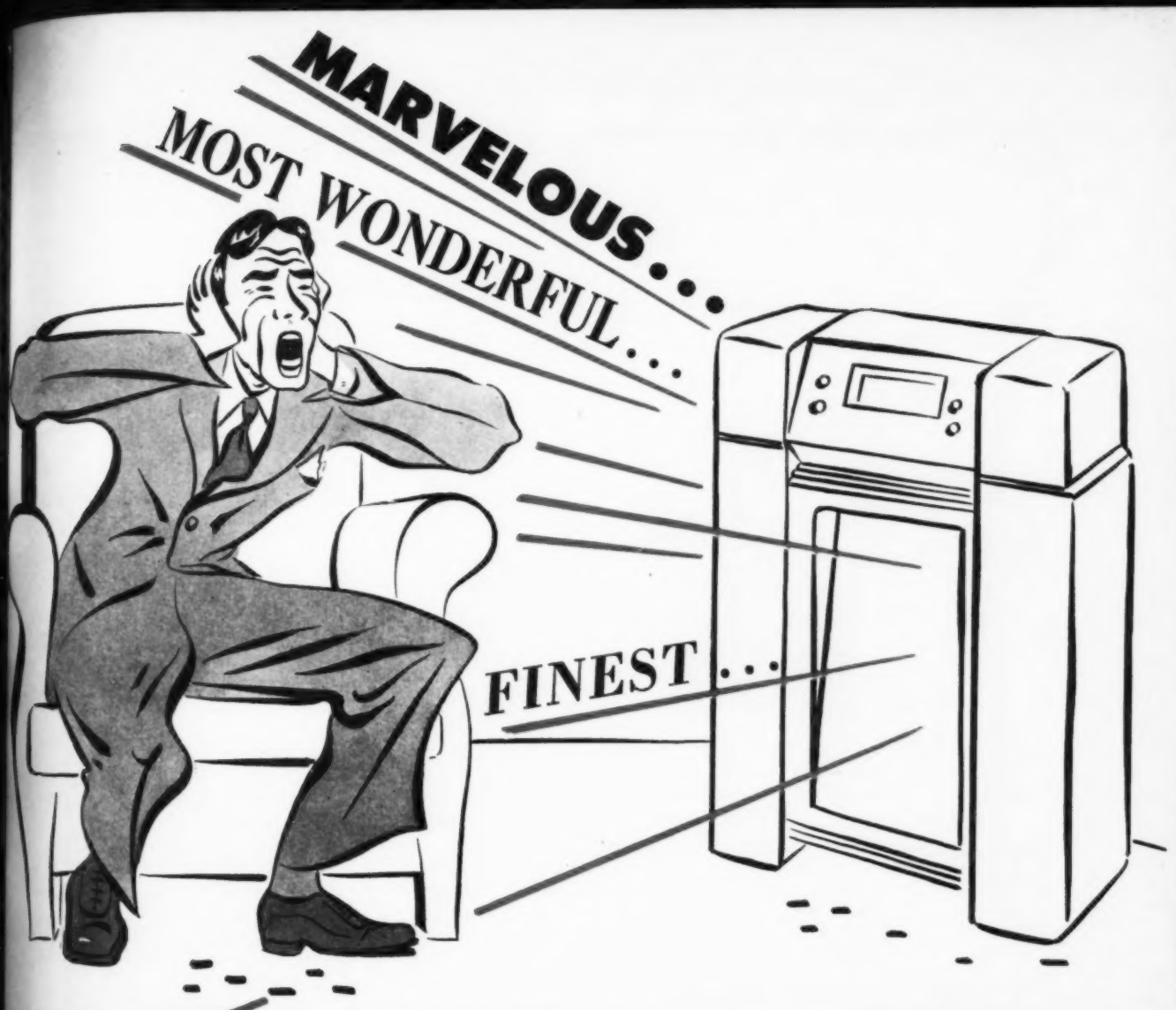

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AS THE EDITOR SEES IT

INCREASE in soap production quotas by the War Food Administration from eighty to ninety per cent for some soaps and up to 150 per cent for others was welcome news to most soapers. Although the fat, oil and fatty acid markets had eased slightly from the extremely tight situation of several months ago, this increase in quotas was quite unexpected by the rank and file of the soap industry. It was not so long ago that some units of the industry could not purchase sufficient fatty materials to operate at the then top limit of their eighty per cent quotas.

Behind this recent quota increase were several factors, all in the direction of better oil and fat supplies. The prospect of bumper domestic crops and a marked increase in imports of oils and fats are the main reasons for easing restrictions. General reports indicate that oil and fat storage facilities have been and are being taxed to the limit by the heaviest stocks in history and that there simply is no room for further production or imports. In addition, it is believed that the end of the year will show that the 1943 production of domestic oils reached an all-time high.

Aiming to build a large stock-pile of oils and fats as insurance against any shortage which might grow out of war conditions, the fat and soap units of the War Food Administration have succeeded even beyond—we have a hunch—their own expectations. Their effort of the past year, exploring innumerable channels for more fats, more fats, more fats—using every possible means to give food and industry sufficient while building a large reserve—is one of which they can be justly proud and to which we are glad to doff our sombrero. They played it safe for the country's oil and fat supply, stuck to their guns in the face of considerable criticism, and attained their objective before they eased up on earlier restrictions. Although we are not out of the woods as far as oil and fat supplies are concerned,—lend-lease is still much in the picture,—there is a feeling that we are over the hump and past the worst of it. The outlook for the average soaper is certainly more rosy than it was a year ago if the basic conditions now in effect do not show any material change.

FOR the manufacturers of industrial soaps whose production quota is lifted to 110 per cent by War Food Administration edict, there is much satisfaction. Maintaining for months that industrial soap and detergent demand had grown at a pace far greater than that of household soaps, and that meeting this expanded demand was to a great extent vital to the war effort, they have seen their views recognized by Government officials. Their ability to produce and ship these larger quantities now becomes chiefly a matter of plant capacity.

Among manufacturers of household soaps, however, the satisfaction of a higher quota is alloyed to a considerable degree by the paper and fibre container shortage. To sum up the situation in the present-day language of the conference room as exemplified by the remarks of a soap executive, we

quote his terse comment. "Now that they have let us make more soap, what the hell are we going to ship it in,—hot air?" And that's the rub. More soap and fewer shipping containers, fewer wrappers!

That manufacturers of small package soap products are faced with a tough problem is quite apparent. Some are working out means to cut paper consumption to the bone. One or two have advocated re-use of shipping cases, but there is a preponderance of sentiment against this as impractical and uneconomic. The prediction has been made that the sale of bulk flakes, chips, and powders by the grocer from the open barrel may return temporarily, — and even the shipment of unwrapped toilet and laundry bar soap in returnable wooden barrels may come.

Probably every soaper who sells small package products has worked out some sort of ways and means to get along with fewer paper cartons and cases,—filling more soap to the package, using lighter weight board, dispensing with liners, wrappers, etc. wherever possible, and similar conservation steps. That soapers voluntarily must and will do everything which they can to cut paper consumption during the shortage is quite obvious. Otherwise, the industry, in spite of the importance of the products which it is packaging and shipping, will face official restrictions which will involve worse managerial headaches.

TO THE statement published in the last issue that small soapers as a whole are refraining from bidding on Army soap requirements, a few soap manufacturers have filed answers promptly and vigorously, and these have been published elsewhere in this issue. They give a number of reasons why the average small soaper *cannot take the risk* of bidding on Government business. As we see it, these answers appear to paint a slightly different picture and put the finger on the Government's way of doing business.

The Government is slow pay, says one reply. Slow but sure pay,—but many soapers cannot afford to wait 90 and 120 days for their money. Except Army, Navy, Lend-lease, Government business had to come out of the former 80 per cent quota, now 90 per cent. Fear of renegotiation and fear of possible later claim for refunds which would be very embarrassing to many small soapers. Fear of inability to obtain tallow, grease, oils after being awarded an order with a specific delivery date,—no large reserve to draw upon in an emergency owing to inventory restrictions,—no authorization to purchase fats accompanies orders for soap.

When we published the criticism emanating from Government officials last month, we had hoped that some small soapers would come out frankly with their ideas on the subject. This they have done and we feel have justified their views to a considerable extent. However, we still believe that the average plant is in a better position today from several practical angles if it has Government orders on its books and that it would pay to go after some of this business in spite of the obvious drawbacks. With an increase in fat supplies, the opportunity to do this should be greater.

According to a well-known small soaper, the increased supply of fats and oils undoubtedly presents a greater leeway in raw materials in bidding on non-quota Government business for the average small firm. But at the same time, it also presents the opportunity to take on more quota business and bring many manufacturers to a point where plant capacity is reached and passed. The temptation to cater to his regular and established trade as far as possible is strong in the minds of any manufacturer, and small soapers are no exception.

RAISE SOAP QUOTAS

Civilian soap output increased 28% by new WFA order . . . await soap conservation rules requiring use of extenders to stretch supplies . . . glycerine to be released for civilian use . . . small soapers review factors impeding their efforts to share in government soap orders.

A SHARP increase in soap production is in the immediate offing, according to an announcement just released by the War Food Administration which predicts an expansion in soap output for civilian use of approximately 28 per cent. Additional fats and oils are shortly to be made available to soap makers to allow for an expansion in output of approximately 19 per cent. The balance of the new soap production, on the basis of the program now contemplated, is to come from the use of rosin and other non-fat extenders to stretch the supply of soap an additional 9 per cent.

From an administrative angle, the change in soap production quotas will be taken care of by issuance of a new amendment to FDO-42. This is expected to be issued early in October and to be retroactive to October 1. The provisions for extending soaps will be embodied in a separate Soap Conservation Order, to be issued shortly and to become effective November 1. It is reported unofficially that the following provisions will be included in this new order.

In toilet and white floating soaps the soap maker will be required to substitute 2 per cent of the fat content with rosin. For fine fabric flakes the requirement will be 5 per cent. In medium duty flakes and granules of the 82 per cent class, 5 per cent rosin must be used and an additional 10 per cent of either rosin or builders must be incorporated. The requirement on 62 per cent laundry flakes and granules will be 5 per cent rosin, plus an additional 5 per cent of either rosin or builders. In white laundry soaps (maximum 42 per cent total anhydrous soap content) 4 per cent of the fat content must be rosin. In yellow laundry soaps (maximum 58 per cent total anhydrous soap content) 37½ per cent must be rosin. The above restrictions are to apply only on household type soaps. No such stretching restrictions are planned at present for bulk soaps, it is reported.

Over the course of recent months soap quotas have been fixed at 80 per cent of the 1940-41 base period. The new program calls for a 90 per cent quota for household packaged soaps and all types of bar soaps; 110 per cent for industrial soap for laundries, restaurants, railroads, etc.; and 150 per cent for abrasive hand pastes and powders. The F.D.A. estimates that on the basis of these new production figures the civilian population will be able to consume an average of 25.4 lbs. per person per year, as compared with 23.4 lbs. in 1942 and 25.3 lbs. in the pre-war period, 1937-1941. Increased production was expected to get under way October 1 and it is expected that by November 1 the new production will be finding its way into consumer channels.

Another phase of the new and more generous soap program, as originally shaped in Washington discussions, is understood to have been an exemption from quota restrictions on sales of soaps to factories, public institutions and hospitals. Soap manufacturers were to have been allowed to supply them without limitation, up to the limits of inventory restrictions. Latest unofficial word from Washington, however, indicates now that this proposal to free such sales from quota restrictions has been abandoned, and such deliveries must still come out of quota limits.

Explanation for the government's almost complete about-face on soap production is not hard to find. Consumer hoarding over the past six months had created a very serious situation which threatened the country with an almost impossible problem of soap rationing if some way were not found to increase soap output. A barrage of complaints has been reaching Washington over recent months, as to the inability of certain consumers to obtain normal stocks of soap, threatening to lead to unsanitary conditions in the home and in the national industrial plant which might have a serious effect on both production and morale. At the same time government stockpiles of fats and oils were growing to the point where it was reported from many quarters to have become difficult to find storage space for new oil arrivals. Improved shipping conditions and release of additional tonnage through recent favorable military developments have finally persuaded the government to make a drastic shift from its former program of reduced soap output,—and the new sharply higher quotas are the answer.

Not only is the soap supply situation now distinctly easier, but the glycerine outlook has also moderated substantially over recent weeks. Early last month the War Food Administration announced that beginning October 1 a limited quantity of glycerine would be released to civilian users who have been denied stocks since March of this year. With inven-

tories now reported at a more satisfactory level, small quantities are being made available to manufacturers of dentifrices, flavors, shaving creams, adhesives, tobacco, shortening, crown caps and protective coatings. With the anticipated sharp expansion in soap output, it would seem probable that very shortly there may be additional supplies of glycerine, over and above the amounts required for military purposes, for release to civilian users. It should be kept in mind, however, that the increase in glycerine production will not quite parallel the increase in soap output, since some of the increased soap production is to come from use of materials which, while stretching soap supplies, do not yield any recoverable glycerine.

A SITUATION which is currently giving much concern to the soap industry is its future position on supplies of shipping containers. Soap makers have been applying for container requirements under P-140, with a rating of AA-4. This rating has not proved to be good enough to get deliveries without lengthy delay, it is reported, some shipments under such ratings having been delayed as long as four to five months. With the increased soap output now anticipated under the liberalized soap production quotas, it is obvious that some steps must be taken to provide soap makers with sharply increased container supplies,—else the action of the FDA in providing increased supplies of soap making oils and fats will be completely nullified. The container division of WPB is at the moment completing the framing of its container supply order—L317—and the status of the soap industry under this order is being watched by soap makers with much concern. It would seem obvious that, since FDA has been given jurisdiction over soap supplies through its control of fats and oils, it would be a serious error of division of authority to allow the action of another governmental agency, in this case WPB, to hamstring the FDA program by denying the industry sufficient container supplies to pack the soap which it is now to be allowed to make.

As a further note on the container supply problem, a recent bulletin of the Association of American Soap and Glycerine Producers recommends that soap makers use form WPB 2408 in applying for preference ratings on paperboard shipping containers, instead of PD-802. They advise that this will expedite processing of applications for AA-4 ratings.

ANOTHER serious situation which seems currently to be in the spotlight is the matter of participation by small soap makers in the task of supplying government requirements for soap. In our September issue we commented editorially on this situation and said in part that "small soapers on the whole are not supplying their share of soap products on government bids for the armed forces, lend-lease and other bureaus, *according to opinions expressed in official circles.*" We have been taken rather sharply to task by several soap manufacturers since the appearance of this editorial, for what they say is an unfair criticism of the small soap manufacturer. The following typical communication from one of our subscribers points out several very good reasons why the small soaper has been handicapped in taking government bid business:

"Referring to your editorial criticising small soapers for not supplying their share of soap for government bids, it appears to me that you do not have the point of view of the small soaper. He would like very much to bid on government business; in fact, he needs government business in order to keep his plant running to capacity and thus hold down overhead. There are, however, at least four reasons why the small soaper does not take on any more of this business. I have not attempted to list them in the order of their importance but give them to you for what they are worth.

"'First, the small soaper is very much afraid of re-negotiation. This would be very much more serious to him than it would be to one of the large companies whose legal staff and highly trained accounting departments would be in a position to handle this matter. A claim for refund would be very serious to the small man while only a matter of inconvenience to the large soaper.

"Second, the government is very slow pay. Any contract running into less than six figures seems to be delayed for long periods of time. It is not at all unusual for the government to take 90 to 120 days or more to pay their bills. This ties up a very large percentage of the working capital of the small soaper and he cannot afford it.

"Third, with the exception of Army, Navy, Lend Lease, Synthetic Rubber and one or two minor items, any government business that is taken on must come out of the 80 per cent quota. (Quotas have just been increased. Ed. Note). There is no reason at all why government business of every nature—federal, state, county and municipal—should not be on the non-quota list. The small soapers are having difficulty enough in keeping their brands established in their immediate territory without taking some of those fats for other government uses.

"Fourth, the restrictions on inedible tallow and grease make it extremely risky for a small soaper to take on any government business, either quota or non-quota. He is restricted to a 45-day inventory including all undelivered purchases for future delivery. With the tallow and grease market as tight as it is at present, he does not dare take on business from the government with a definite delivery date and penalties for non-delivery unless he knows where he can secure the fats. The same order should give an authorization to purchase fats with which to make soap for government uses and should remove fats purchased in such fashion from the inventory restrictions. Unless this is done, I do not believe that there will be very many small soapers willing to mortgage their 45-day inventories unless there is definite assurance given them in the way of

(*Turn to Page 78*)

SYNTHETIC DETERGENTS . . .

Some of the more common non-soap detergents, their composition, characteristics and uses discussed, —first of a series of two articles

By Dr. Foster D. Snell

DETERGENCY is too broad a concept and detergents too varied in nature, to permit description in simple chemical terms. They are best defined rather, in terms of performance. Detergents clean; they remove soil from solid surfaces. To do this, it has been found from study and experience, they must possess certain specific properties. The detergents to be considered here are those which are water-soluble; as a matter of fact, the properties of their aqueous solutions are those which are of interest rather than of the original material itself.

Wetting Power: In solution a detergent must first increase the wetting power of water. To accomplish this it must be surface-active; the molecules must be more concentrated in the surface of the solution than in its interior. Laboratory measurements which are believed to show a relationship to this property include determination of surface tension and of interfacial tension.

A qualitative relationship appears to exist between increase in wetting power and the lowering of surface tension, that is, the tension of a solution against air. This should hold particularly in the wetting of a dry surface such as that of fabric or even of solid dirt by a detergent solution. The fabric or the dirt holds adherent air in its interstices and capillaries. Before the surface can be wet, this air must be displaced by the solution. Within limits, the more a compound lowers the surface tension of water, the better should be its wetting power for such a surface. A solution which lowers surface tension displaces adherent air more quickly than water alone would. Ability to lower surface tension proves that a compound is surface-active, which is at least a start toward detergency.

Lowering of interfacial tension is related to the ability of a solution to wet the surface of a solid or of another liquid. Determinations of interfacial tension can be made against various types of surfaces, but when used in relation to general detergency, the measurements are ordinarily made at a solution-oil interface.. Within limits, the greater the lowering of interfacial tension against oil, the better the wetting power of the solution for an oily surface. Whether the oil used in the laboratory determination is saponifiable or a petroleum fraction, would depend on the application to which the test agent is to be put. A saponifiable oil would be used, for example, in studying detergents for the scouring of wool, a hydrocarbon oil in studying detergents for removing spindle oil from cotton.

Ability to lower interfacial tension is a measure of wetting power for the particular interface created. It should be more closely related to detergent power than is the ability to lower surface tension, since soil to be removed is usually oily in nature, which helps it to cling to fabric or skin, so that the detergent solution must be able to wet this oily surface. An oil-solution interface is of greater significance in most detergent problems than an air-solution interface.

A more direct method of determining wetting power is embodied in the Draves test. This measures the time required for a weighted standard skein of cotton yarn to sink in a known concentration of a solution of the surface-active compound being studied. It measures the ability of a solution to wet unboiled dry cotton fiber. The test was designed as an aid in studying the relative wetting power of textile agents intended to promote penetration of dye liquors into fabric or yarn and to secure level dyeing. The test is undoubtedly a valuable one for the purpose for which it was developed. Possibly it could be modified so as to have a more direct bearing on detergent ability if the cotton yarn to be used were soiled with a standardized soiling mixture. Wetting power could then be measured against the particular type of "soil" used rather than against cotton coated with its natural waxes.

Values obtained by any of these methods are only relative; they show whether one compound is more effective than another under the conditions of the particular experiment, that is, in reducing surface tension, in reducing interfacial tension, or in wetting cotton yarn, respectively.

Emulsifying Power: A detergent must not only possess wetting power, it must also have emulsifying

ability. This means that it must be able to remove oily matter from the surface to which it adheres and suspend it in the form of fine particles or globules within the detergent solution. After removal, these particles or globules must be prevented by the emulsifying agent from coalescing or coming together, and from redepositing on the cleaned surface. As a fine dispersion, the particles can be easily removed by being rinsed away. This of course is speaking of emulsification in its relation to detergency. Problems of emulsification are similar in the preparation of such commercial emulsions as rubless floor waxes, furniture polishes, agricultural sprays, etc., although the purpose there is quite different. In each case a similar type of surface-active force is involved in the production and stabilization of a particular emulsion.

Perhaps the laboratory determination most closely related to emulsification is measurement of the contact angle made by the oil-water interface with the surface of the fiber from which oily matter is to be removed. In order for the oil to be removed from the fiber this contact angle must be altered from 180 degrees to 0 degrees. Not only must the surface-active agent lower the interfacial tension between oil and water but the force of adhesion between its solution and the fiber must be greater than that between the oil and fiber. The solution of surface-active agent must first wet the oil and then remove it by displacing it from the fiber. This is what happens when the contact angle is reduced to zero. This measurement therefore shows not only whether the detergent solution wets the oil and wets the solid surface, but goes further in showing whether it will dislodge the oil from that surface. The smaller the concentration of surface-active agent which reduces the contact angle to zero, the better its emulsifying power.

Reduction of the contact angle to zero implies sorption of detergent solution by the fiber. That such sorption occurs has been proved by determinations of the ash content of washed fabric. Soap is sorbed to a greater extent than most of the synthetic surface-active agents. In the usual detergent process the amount of agent sorbed is desirably kept to a minimum.

Surface - tension lowering and interfacial-tension lowering are also related to emulsification. Some investigators interpret the ability of an agent to lower surface tension as a measure of its power to disperse air in fine bubbles, the ability to lower interfacial tension against oil as a measure of its power to emulsify oil.

Dispersing Power: A detergent must have wetting and emulsifying power, and in addition dispersing or deflocculating power — the ability to keep solid particles in suspension in the detergent solution. The opinion has frequently been expressed that in problems of general detergency, solid particles of soil to be removed and dispersed carry a surface film of oil, so that their removal and suspension is similar to the work of emulsification. Again the force of adhesion between the solution and the fiber must be greater than that between the solid particles and the fiber.

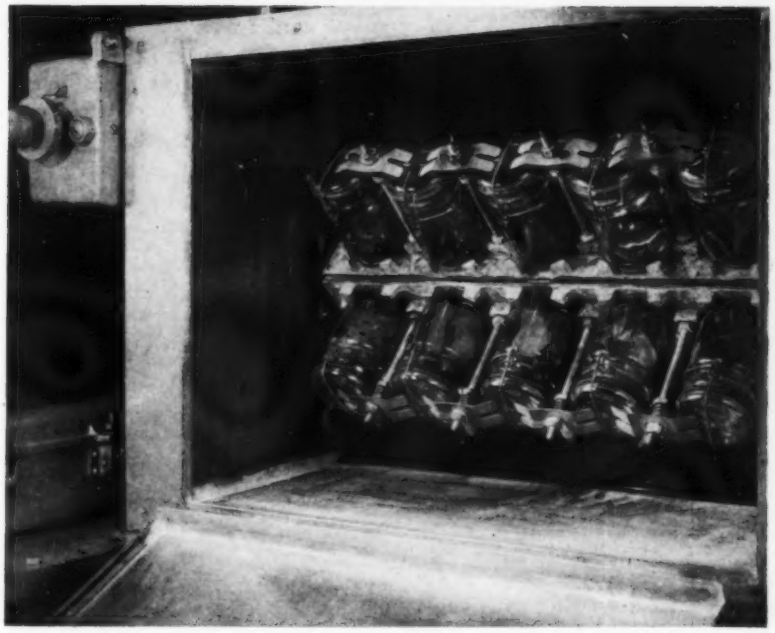
Laboratory experiments to show the relative suspending power of surface-active agents for unoiled solid particles are frequently carried out with known amounts of carbon black with a definite concentration of test agent in solution. Such experiments have special applications not necessarily related to detergency.

From the above discussion, it appears that the most fundamental property of a detergent is surface activity, possessed by compounds that concentrate in the surface or interface of their solutions, and demonstrated by the lowering of surface tension and other properties susceptible to measurement. But surface activity varies in degree and in kind. No distinct lines can be drawn to differentiate wetting agents from emulsifying agents, or emulsifying agents from detergents. Many of the numerous patents covering surface-active compounds claim for their products wetting, emulsifying, dispersing and detergent properties, although the product may not be a detergent in the sense in which the term is used here. In other words, it won't and isn't expected to do what soap will do. At the same time it would be difficult to say just where one function leaves off and another begins.

Wetting power indicates a mild degree of surface activity, emulsifying power a greater degree, and detergency an even greater degree which includes both wetting power and emulsifying power. Satisfactory detergents will emulsify spindle oil, olive oil, or lanolin with water, in concentrations lower than are required to remove the same oils from textiles.[1] This doesn't mean that a surface-active agent that possesses wetting power but not emulsifying and detergent power may not be highly useful; it means only that its usefulness appears in certain definite applications, as in increasing the ability of glue to wet a smooth water-repellant surface—a lacquered surface for example, so that the glued material will adhere to it. One reason for the appearance on the market of such large numbers of wetting agents is the diversity of uses to which they can be put. One use requires one kind, another use a different kind. For example, specific wetting agents have played a part in the improvement in the methods for the flotation of minerals, so that low-grade ores which at one time would have been discarded, are now economically worked up.

The laboratory methods referred to furnish a means of measuring *relative* surface activity. In order to interpret the results on a practical basis, they should be compared with the values obtained under the same conditions with an agent of known workable usefulness. For example, if the product aims at general detergency in alkaline solution, how do the values obtained with it compare with those given by soap? If the product is to promote penetration in a dye bath, how do the values compare with those of an agent already proved useful for that purpose? Are they better or poorer wetting agents by the Draves test? Many of the synthetic products have detergent power under conditions where soap is unsatisfactory, as in hard water, and below pH of about 10, so that the conditions of use are important in evaluating a new product.

As a more direct method of studying the detergent value of a



The most commonly used machine for standard washing tests is the "Launderometer" manufactured by Atlas Electric Devices Co., Chicago. The machine illustrated is a 24-place model pictured in the laboratory of Hercules Powder Co.

surface-active agent, common laboratory procedure is to wash under controlled conditions samples of cloth which carry a selected standardized soil. This is frequently a mixture of soot in the form of carbon black with a saponifiable oil, or a mixture of carbon black, saponifiable oil, and hydrocarbon oil.

Standard washing tests with wool and cotton swatches, the two materials carrying different "soil," were made with three agents,—a polyglycerol ester, a fatty alcohol sulfate, and an amide sulfonate, the latter being one of the Igepons. At the same time the ability to lower surface tension and to lower interfacial tension against oil was measured with varying concentrations of the same agents.[2]

The surface-tension curves for all three were so nearly identical that no differentiation could be made. Interfacial-tension curves were similar to one another but showed slight differences, lowering of interfacial tension by the fatty alcohol sulfate being greater than with the other two compounds. The washing tests showed that all three gave fair detergency in hard water, which was better against the soiled wool than against the soiled cotton. The polyglycerol ester appeared somewhat less efficient as a detergent than the other two agents.

This shows that slight differences in the ability to lower interfacial tension are not necessarily reflected in results by standard washing tests. These and further studies emphasized the fact that detergency is complicated not only by the nature of the surface-active compound, but by the nature of the soil being removed, by the nature of the material being cleaned, and by the effects of different conditions of temperature, water hardness, neutral-salt concentration, and the degree of alkalinity, or the pH during the washing process.

Chemical Nature of Detergents: All surface-active compounds contain two opposing groups in the molecule, one water-repelled, the other water-attracted. The group repelled by water consists of a hydrocarbon chain, $CH_3CH_2CH_2$—, the group attracted by water contains oxygen, sulfur, nitrogen, or halogen, or consists of an unsaturated linkage. More than one of each type of group may be present. Since this discussion is limited to water-soluble agents, the compounds of interest here are such that the influence of the solubilizing group is greater than that of the hydrocarbon group. Other terms used in the literature to describe these opposing characteristics are hydrophobic and hydrophilic, nonpolar and polar, respectively. Examples of solubilizing groups often present in synthetic surface-active agents are, in a roughly decreasing order of solubilizing power:

1. The sodium salt of a sulfated compound ...—OSO_3Na
2. The sodium salt of a carboxylic acid .....—COONa
3. The sodium salt of a sulfonated compound .—SO_3Na
4. A sulfuric acid ester...—OSO_3H
5. A sulfonic acid .....—SO_3H
6. A hydroxyl group .....—OH
7. An ether oxygen atom.—O—
8. An amine .....—NH_2
9. An amide derivative ..—CONH—
10. An organic ester group.—COOR
11. A halide .....—Cl
12. An unsaturated hydrocarbon linkage .....—CH:CH—

When a sulfate, carboxyl or sulfonate group has been neutralized, this is commonly done with caustic soda to form the sodium salt. A nitrogen-containing group may be an amine, an amide or a quaternary ammonium salt. The last contains halogen, which is commonly the chloride. The quaternary ammonium group has a polar effect which is so dependent on the nature of the substituents and of the negative radical combined with it that it cannot be given a definite position in

the above list. Unsaturated bonds also promote solubility, as evidenced by the much greater solubility of sodium oleate over sodium stearate, both of which have the same length of hydrocarbon chain.

The solubilizing influence of the sulfuric-acid or sulfate group (No. 4) is illustrated by Turkey red oil which is sulfated castor oil. Castor oil is not soluble in water, but after it has been treated with sulfuric acid, which reacts with the hydroxyl, —OH, group of the ricinoleic-acid radicals to form a sulfuric-acid ester, the sulfated compound is water soluble and shows wetting power in acid solution. This is a true sulfate with the linkage through oxygen, rather than a sulfonate with the linkage through sulfur (No. 5). When the sulfate or sulfonate hydrogen is neutralized as in No. 1 and No. 3 respectively, the solubilizing power is increased.

The degree of solubility seems to be of great importance in a surface-active compound — if too soluble it loses wetting power and if too insoluble it is ineffective in an aqueous medium. For example, the lower, and highly soluble fatty-acid salts such as sodium butyrate and sodium valerate with four and five carbon atoms, respectively, are not wetting agents at low concentrations, while the homologous salts having 20 or more carbon atoms in the chain such as the sodium salt of arachidic acid, a C_{20} acid, are too insoluble in water to be useful. The relation of solubility to effectiveness seems to be more important for wetting agents than for detergents. For example a wetting agent found to be more effective than about a hundred other commercial agents, in terms of the Draves test, is soluble in water only to the extent of 1.5 per cent.[3] A similar chemical compound differing only in having shorter hydrocarbon chains, becomes soluble to the extent of 33.4 per cent, but falls off sharply in wetting power.[4]

An outstanding example of the correct balance between water-insoluble and water-soluble groups to give detergent properties and the desired degree of solubility under the proper conditions is shown by soap. Here we have a hydrocarbon chain combined with the salt of a carboxyl group, —COONa, as the two opposing forces. Compounds containing 12 to 18 carbon atoms are good detergents but the degree of their effectiveness is related to solubility.

Sodium stearate, $CH_3(CH_2)_{16}$ COONa, a saturated C_{18} compound, is a better detergent at 43° C. or 110° F. where it is moderately soluble, than it is at 25° C. or 77° F. where its solubility is too low for it to be effective. Sodium oleate, a C_{18} compound similar in composition to sodium stearate except that it contains a double bond in the middle of the hydrocarbon chain, is so much more soluble because of the presence of the double bond that it is a more effective detergent at 25° C. than it is at 43° C. At the higher temperature it is too soluble.

Sodium laurate, $CH_3(CH_2)_{10}$ COONa, similar in composition to sodium stearate but with the carbon chain reduced to C_{12}, is accordingly more soluble than the stearate and is more effective as a detergent at a lower temperature than that for the stearate. Commercial soap, being a mixture of combined fatty acids is effective over a wider temperature range than the salt of any single fatty acid.

Molecules like those of soap consisting of a long hydrocarbon chain with a solubilizing group attached at one end, orient themselves after concentrating at the surface of the solution or at an interface. The water-soluble group remains in the water, the hydrocarbon chain sticks out into the air or dissolves in oil at an oil-water interface. Such an orderly arrangement with each molecule standing on end permits closer packing of the molecules, just as matches bound into a book of matches are much closer together than they would be if loose and dropped at random into a box.

This structure of a straight hydrocarbon chain with a strongly solubilizing group at one end appears to be fundamental to detergent ability but not to wetting power. The hydrocarbon chain may contain unsaturation but must not contain as strong a solubilizing group as hydroxyl, —OH. See the table. This is illustrated by the good detergency at room temperature of a soap of oleic acid, with a double bond in the middle and the poor detergency of a soap of rincinoleic acid, with a hydroxyl group in the middle, at the same temperatures. In practical terms, soap made with Turkey red oil is a good detergent in cold water; soap made with castor oil a poor detergent.

The structure of synthetic detergents aims at the same general balance of insoluble and soluble groups as in soap, with the soluble groups attached at one end in order to permit orientation to give maximum concentration of molecules at an interface. Apparently, the greater the number of properly balanced molecules at an interface, the greater the detergent power of the surface-active agent.

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[1] C. Robinson, "Wetting and Detergency," p. 147. Chemical Publishing Co., 1939.

[2] E. T. Williams, C. B. Brown, and H. B. Oakley, "Wetting and Detergency," pp. 163-74. Chemical Publishing Co., 1939.

[3] C. R. Caryl and W. P. Ericks, *Ind. Eng. Chem.* 31, 44-7 (1939).

[4] C. A. Sluhan, *Chem. Industries*, September, 1940.

(To be concluded)

Study Fruit Washing Detergents

An investigation to determine the value of detergents suitable for washing citrus fruits is under way at the Lake Alfred, Fla., sub-station of the Florida Agricultural Experiment Station, according to a brief progress report, included in the latest annual review of the Florida station's activities. In preliminary experiments the detergents used were soaps, soap plus various builders, and proprietary cleaners containing aromatic sodium sulfonates. The tests were not complete enough to make accurate comparisons between the various cleaners, according to Charles K. Clark, chemist in charge, but indicated that the shrinkage of fruit is related to washing treatment, this being true whether the fruit was held unwaxed or waxed with an emulsion following the washing. Further work is planned and a final evaluation of the different detergents is expected to result from the experiments.

COCONUT OIL...

a review of the current supply situation

THE recent easing of the coconut oil situation, whereby soap makers have been allowed to buy back some percentage of the stocks which the government froze and subsequently bought from them, has given rise to much speculation as to the origin of the stocks of oil which have made possible the relaxation of former strict controls. The easier coconut oil situation has meant, incidentally, that many soap makers have recently been able to increase the percentages of coconut oil content in their soaps by as much as five and six per cent above the drastically reduced percentage content necessitated by the almost complete shutting off of coconut oil importations shortly after the entrance of the United States into the war.

So far the government, through its various agencies: Commodity Credit Corporation, the Food Distribution Administration and War Food Administration, has released about 90,000,000 pounds of high lauric acid content oils for the soap kettle, a large portion of which was coconut oil. The third release of previously frozen stocks consisted of coconut and babassu oils. At the time of this release, an official government announcement explained that recent imports of copra made the release of coconut oil possible. Trade opinion was that there were other factors involved in the release,—one reason being perhaps a shortage of oil storage space. Heavy government purchases of oils and fats, plus control of all imports, (their size an official secret) and an ever mounting government stockpile, were considered as the basis for this explanation. Another view was that the government wanted to put stored oils into process before the glycerine content was further reduced by additional deterioration.

The view that the government wanted to get the oils processed was based on the expressed belief that up until the time of the first release of high lauric acid content oils, some had been in stock almost 18 months. This long storage period inevitably reduced the potential quantity of recoverable glycerine.

The lack of adequate storage facilities reason for coconut releases was confirmed by a spokesman at the CCC office who explained that the sharp drop in ship sinkings had resulted in surplus amounts of oil from those stocks which had been set aside against the possibility of losses through ship sinkings. As fewer and fewer ships were lost (none, it was said in one quarter in recent months) excessive amounts of oil piled up from imports and stock piles set aside as insurance against the danger of possible losses. Shipping conditions, once a serious problem as far as imports were concerned, have bettered considerably in recent months. This bears out the early spring prophecy of our navy department that the submarine menace would be "licked by fall." Although the submarine menace has recently been reduced sharply, the danger to shipping from submarines seems to be under control rather than entirely eliminated. One encouraging result, however, has been that we are able to bring ever increasing amounts of oils and fats into United States which can go into soap making.

Where are these imports originating? Well, coconut oil and copra are being brought in from Ceylon, Africa and from some of the tropical islands in the Pacific. We have been, of course, receiving babassu in fairly good quantities from South America up until the past few weeks, which mark the end of the babassu season. In the absence of precise figures as to the quantity of coconut oil and copra being brought in from Ceylon, there are contradictory reports that we are receiving (a.) large quantities and (b.) small quantities. Ceylon, a British island possession just off the southern tip of India, produces a high quality coconut oil. However, due to unfavorable tariff conditions, little Ceylon coconut oil came into this country prior to Pearl Harbor. A quantity did, however, go into Canada, where the tariff situation was favorable, and, naturally, a good bit went to England.

With the outbreak of the war and the subsequent shipping shortages, a good deal of copra is reported to have piled up in Ceylon. The mills there were overtaxed, and thus, when shipping conditions eased up a bit we were able to obtain the copra from Ceylon. We are also reported to be bringing out some of the oil. At the present time, most of the copra is now said to have been cleaned up and to be either in or en route to this country. It arrives at east coast United States ports, coming across the northeastern tip of the Indian Ocean, up through the Red Sea into the Mediterranean, and thence across the South Atlantic. With the reduction of Axis threats to our shipping in these waters, the volume of imports has naturally swelled. A good percentage of shipping was also added to our available list by the elimination of the need for shipping to go down around the tip of Africa, which added about six weeks to the shipping trip from Indian and Asiatic ports both to Britain and the U. S. With the Allies taking control of Africa, we were able to obtain some coconut oil and copra from Africa itself.

The possibilities of increasing the size of the Ceylon coconut crop yield are not too good, say the importers. Ceylon is overcrowded with plantations at the present time, and if it were to add to its number, the time lapse between actual plantings and yield would probably be too great for this

source to be of aid within a reasonable time. Augmenting Ceylon's offerings with some from India, often mentioned as a coconut source, is unlikely. The big obstacle to relief from this direction is said to be the poor quality of the Indian product.

The easing or apparent easing of the coconut oil situation is a fairly accurate reflection of the situation generally in high lauric acid content oils. Although the picture about a year ago was considered very dark, importers are more optimistic today than at any time in the past year or more. A factor contributing to this feeling is the evident success which we are having in bringing babassu from South America. While here again no figures can be given out for the usual reasons of security, the babassu picture is viewed with considerable satisfaction by people close to the situation. The recent government order freeing some babassu for use in the manufacture of non-edible products such as soap is taken as an omen of better things to come,—the "better things" in this case being larger amounts of babassu for use in soap kettles. In this connection, it is reported that the CCC plans in the fourth quarter to release another 30 per cent of the coconut and babassu oils for use by soap makers. This figure represents a slight cut for this particular quarter, but the outlook for increased supplies of babassu for soap use next year is said to be good.

Departing from present to future for a brief look at post war possibilities, the answer to the question "Will babassu replace Philippine coconut oil?," was given that price will be the sole determining factor.

HOW has the improved coconut oil supply situation affected the soap maker? As would be expected, having had their applications for repurchase of coconut and other high lauric acid content oils approved, some soap makers are increasing the percentage of coconut oil content in their soaps. With the extremely tight former supply situation on coconut oil, soap makers had earlier in the year reduced the percentage in soap from about a normal 20 per cent in toilet soaps to 5, 6 or 7 per cent. Some are said to have eliminated it entirely. With the freeing of coconut oil for use once again in soap making, the coconut oil percentage has now been raised by many soapmakers back to the normal content. One soaper reported he had, prior to the coconut oil scarcity, been using 20 per cent coconut oil content in his toilet soap. When coconut oil was cut off he reduced his percentage to seven. Within recent weeks he has raised coconut content back to 20 per cent as the supply situation has progressively improved.

Another soaper reported that he was no longer concerned with coconut oil because: (1) It is no longer as essential a raw material as it was in the past; (2) Employing other fats and oils which now occupy a position in the raw material schedule heretofore occupied by coconut oil; (3) Was using less and less coconut anyway; (a) Has found that the larger amounts of coconut oil formerly used in various products irritate the skin, etc., whereas the new formulas employing less coconut oil are much more satisfactory; (4) Present fats and oils quotas and government production limitations under which manufacturers are now operating would be upset by the substitution in the raw material schedule of coconut oil for the products that had been substituted for it. Going back to coconut oil would necessitate revamping of product formulations and production schedules.

This man pointed out that some of the replacement materials were cheaper than coconut oil and that to substitute more costly raw materials without being able to raise the price of the finished product would be economically impractical. Of course, should the price of coconut oil be reduced, then perhaps it might again find the widespread use it knew in pre-war days. However, he was of the opinion that coconut oil would never again be employed in the manufacture of soaps as widely as in the recent past.

Another soaper reported that he had been able to get by on his inventory of coconut oil during the period when it was scarce, and is merely replacing that inventory with coconut oil that has recently been made available to soap manufacturers by the government.

2nd Quarter Fat Use Drops

Soap makers registered a decline in their use of primary fats and oils during the second quarter of 1943, according to the latest report of the U. S. Bureau of the Census just issued. Total consumption amounted to 388,565,000 lbs., as compared with 415,711,000 lbs. in the first 1943 quarter and 427,145,000 lbs. in the final 1942 quarter. The second quarter 1943 rate of consumption represents quite a drop from the 1942 level of operations, the drop in average rate of fat use figuring about 17 per cent against the total of 1,870,000,000 lbs. of fats and oils used by the soap industry in the full year, 1942.

The most important soap making raw materials continue to be tallow and grease, although there was a moderate increase in use of coconut oil during the second 1943 quarter. The complete list of soap making raw materials used during the second quarter follows. Figures are given in thousands of pounds.

VEGETABLE OILS:	
Cottonseed, crude	226
Cottonseed, refined	38
Peanut, crude or virgin	3
Peanut, refined	39
Coconut, crude	14,386
Coconut, refined	12,483
Corn, crude	65
Corn, refined	10
Soybean, crude	185
Soybean, refined	554
Olive, inedible	128
Olive, sulphur oil or olive foots	1,406
Palm kernel, crude	266
Palm kernel, refined	279
Palm, crude	3,154
Palm, refined	411
Babassu, crude	1,267
Babassu, refined	444
Linseed	437
Castor No. 3, crude	5
Castor, sulphonated	20
Sesame	63
Other vegetable	173
ANIMAL FATS:	
Stearin, animal, edible	6
Tallow, edible	18
Tallow, inedible	224,708
Neat's-foot oil	52
FISH AND MARINE OILS:	
Marine mammal oils	215
Fish oil	16,856
GREASES:	
Greases, other than wool	110,668

Box method of tapping liquid ambar tree. Photo courtesy Carlos Schaeuffler.

STYRAX *and* OIL *of* STYRAX

by Dr. Ernest Guenther

Fritzsche Brothers, Inc.

STYRAX is an aromatic balsam formed by the styrax tree in self-defense when the sapwood is injured. This pathological, rather than physiological, exudation congeals upon exposure to air. It is collected for commercial purposes and widely employed in perfumery, for the scenting of soaps, and in certain medicinal preparations.

There exist on the market two types of styrax, viz. the so-called Asiatic or oriental styrax, which is of lower quality, and the American styrax which, since the first World War, has become of much more importance than its Old World prototype.

Asiatic Styrax

THE oriental sweet gum *Liquidambar orientalis* Mill. (fam. *Hamamelidaceae*) is a native of Asia Minor, in the southwestern parts of which it forms large forests. The platana-like tree grows from 20 to 40 feet, in some cases 90 feet high; the smooth leaves are shiny bright green on the upper surface, pale underneath. It grows wild in colonies, the most important of which are located in swampy valleys near the sea, between Makri and Giova. These styrax forests belong to the Turkish government or to private individuals; they are exploited by groups of woodsmen who sell their output to the owners or to exporters. One foreman and four workers can treat about five hundred trees daily. According to a government report[1], styrax is obtained from the time the trees are three to four years old, collection beginning early in May when they are in full foliage.

The surface is prepared by removing the outer layer of bark and sapwood from opposite sides of the tree. The exposed surfaces are then scraped at intervals of several days during June, July and August. Production is interrupted during the rainy season which starts in mid-November. Thus the trees are exploited for seven or eight months every year, until the trunks are whittled down from the opposite sides to about two-inch thickness. They are then left to recuperate for three or four years, treated again, and finally felled for firewood. The shavings collected each day are boiled in water and filtered through coarse cloth bags with the aid of a press. An emulsion of resin and water which exudes from the press is collected. The resin rising to the surface is separated and sold, while still containing 25 to 30 per cent water, to merchants who remove most of the water and dirt, sometimes also adulterating it with pine resin or oil of turpentine. The balsam is then in normal times finally sent to Constantinople, Smyrna, and other ports of the Levant, and from there to Marseille. During 1934, the United States imported more than 35,000 pounds of Asiatic styrax from Turkey, Italy and France. Previous to the first World War, Anatolia

produced yearly from 100,000 to 120,000 kilos of styrax.

According to Jeancard[2], young trees yield only a few hundred grams of balsam, older ones 6.4 to 7.7 kilos. At the beginning of the season 10 kilos of shavings are required per kilo of balsam, in summer only 5 to 6 kilos. During hot spells tears of white styrax can be obtained; their odor is superior to that of ordinary styrax.

Physico-Chemical Constants

ASIATIC styrax is a semiliquid, sticky, opaque mass of grayish to grayish-brown color which deposits, on standing, a heavy, dark brown layer. It possesses a peculiar, characteristic odor and a sharp, somewhat spicy taste. When heated moderately, the mass melts. Crude Asiatic styrax contains a considerable amount of water and foreign matter which must be removed in order to clarify the product.

A number of analytical methods have been devised for testing styrax in regard to purity and for the presence of adulterants such as rosin, kerosene, oil of turpentine, fatty oils or exhausted styrax from which the volatile oil or the cinnamic acid had been removed, or partly removed, by steam distillation. Ahrens[3] based his method of analysis upon the partial solubility of styrax in petrol ether. He also developed a direct test for the amount of water present in the balsam. Bohrisch[4] applied the method of Hill and Cocking[5] for determining quantitatively cinnamic acid in styrax. Another method of ascertaining the content of cinnamic acid was recommended by van Itallie and Lemkes[6]. The most important principles of testing styrax were described by Anselmino, Seitz and Bodländer[7]. Examining samples of pure styrax from Asia Minor, they found constants varying between following limits:

	A.V.	*S.V.*	*E.V.*	*E.V.* : *A.V.*
Authentic crude styrax	45 to 61	125 to 147	79 to 92	1.4 to 1.9
Calculated upon styrax freed from water	64 to 80	178 to 195	107 to 122	.....

These investigators furthermore established the following limits:

Loss upon drying	25.5 to 32.5%
Content of water	22.3 to 31.5%
Alcohol soluble portion	64.8 to 72.9%
Alcohol insoluble portion	1 to 3%
Total cinnamic acid as calculated upon water-free styrax	21.3 to 25.89%
Total cinnamic acid	14.6 to 19.4%
Free cinnamic acid	0.08 to 4.43%
Phenol content	19.93 to 29.42%

The United States Pharmacopoeia, Twelfth Revision, specifies for crude styrax, Asiatic as well as American:

Solubility	Styrax is insoluble in water, but soluble, usually incompletely, in an equal weight of warm alcohol. It is also soluble in acetone, in carbon disulfide, and in ether, some insoluble residue usually remaining.
Loss on drying	Not more than 20% by weight.
Alcohol-insoluble residue	Not more than 5% by weight.
Alcohol-soluble residue	Not less than 70% by weight.

Shipments of crude Asiatic styrax examined in our New York laboratories showed constants which varied between the following limits:

Loss on drying	7.0% to 20.0%, in exceptional cases up to 28.0%
Alcohol-insoluble residue	2.0% to 8.0%
Alcohol-soluble residue	70.0% to 92.5%
Acid value of styrax purified according to the U.S.P. XII test	51 to 66
Saponification value of styrax purified according to the USP XII test	168 to 194
Color	Brown
Appearance	Opaque, semisolid

The United States Pharmacopoeia, Twelfth Division, requires that the balsam be free of rosin or rosin oil:

> Triturate about 2 Gm. of styrax with 25 cc. of purified benzin in a small beaker for 5 minutes. Filter the mixture, and place 10 cc. of the filtrate in a dry test tube. Add 5 cc. of dilute sulfuric acid (made by mixing equal volumes of sulfuric acid and distilled water and cooling the mixture), shake it vigorously, and allow the mixture to settle. Add acetic anhydride, drop by drop: the mixture exhibits no violet or purple band.

According to our experience, the inaccuracy of this test for rosin or rosin oil lies in the difficulty of its interpretation. If the addition of acetic anhydride, drop by drop, be stopped after an addition of three or four drops, the test will appear negative. However, upon further addition of acetic anyhdride, a violet or purple band appears, even in the case of pure styrax free of rosin. The rosin test described on page 608 of the USP XII, using petroleum benzin and copper acetate, is therefore, in our opinion, to be preferred.

The percentage of alcohol- soluble and alcohol-insoluble residue in Asiatic crude styrax differs considerably from that of American crude styrax and does not always conform with the requirements of the U.S.P. XII. This discrepancy is probably caused by the age of the Asiatic product which is usually examined much longer after production than the geographically nearer American styrax. During the long transport from Asia Minor, styrene, an important constituent of the balsam, polymerizes, the resulting polymer being insoluble in alcohol. Therefore, certain allowances should be made in evaluating these factors, even though the balsam may not conform with U.S.P. requirements. It should also be pointed out, in this connection, that old lots of crude styrax, in which polymerization has taken place to its fullest extent, are most suitable for purification because it is easy to separate the polymerized, alcohol-insoluble portions and no further polymerization will take place in the purified product.

Incidentally, the technique of sampling styrax is of great importance in evaluating a lot. It is necessary to stir the product thoroughly so that the water becomes evenly distributed. If this rule is not followed, the constants

obtained will be quite abnormal, and an actually normal product may be rejected.

Purified Asiatic Styrax

WHEN dissolving crude styrax in alcohol, filtering off the insoluble residue and concentrating the combined alcoholic filtrates, a yellow to brown residue remains. This purified styrax is not always clear; its appearance depends greatly upon the styrene content of the crude styrax which was employed for purification. The purified styrax, as made commercially on a large scale, is not necessarily identical with that described in the U.S.P. test for alcohol-soluble residue, the latter forming only a part in the analysis of Asiatic and American styrax. The U.S.P. XII requires that the purified styrax obtained in the test for alcohol-soluble residue fall within the following limits:

Acid value	50 to 85
Saponification value	160 to 200
Cinnamic acid—Not less than 25% of the purified styrax taken.	

Commercially purified Asiatic styrax, processed in our New Jersey factory, showed the following constants:

Acid value	53 to 59
Saponification value	178 to 188
Color	Brown
Appearance	Clear, viscous, liquid

Chemical Composition of Styrax

THE most important constituent of styrax is probably storesin, $C_{30}H_{55}(OH)_3$, which is present in the α- and β- form, both free and as a cinnamic ester. These compounds amount to from one-third to one-half of the resin. Storesin is an amorphous substance, melting at 168° C., readily soluble in petroleum benzin. Cinnamic acid, both in free and in ester form, constitutes another important part of styrax. Free cinnamic acid ranges from 5 to 15 per cent, but may be as high as 23 per cent. Of the cinnamic esters, cinnamyl cinnamate, also called styracin, is present in the proportion of 5 to 10 per cent. It can be isolated by ether, benzin, or alcohol after the cinnamic acid has been separated from the resin. Cinnamyl cinnamate volatilizes only with superheated steam; it crystallizes in tufts of long rectangular prisms, m.p. 38° C., which frequently do not form readily. Saponification with concentrated solution of potassium hydroxide gives a cinnamate and cinnamic alcohol (formerly also called styrone), which latter is not present in liquid styrax. The most important of the other cinnamic esters is phenyl propyl cinnamate which amounts to about 10 per cent of the balsam. Furthermore, there are present small quantities of ethyl cinnamate, benzyl cinnamate, and a hydrocarbon, C_8H_8, which exists in the resin as a liquid, and also in polymeric form as a solid. The former, called styrol, styrene or cinnamene, is a colorless, mobile liquid, possessing the characteristic odor and taste of styrax. Styrene is phenyl ethylene, $C_6H_5.CH = CH_2$. When heated, styrene polymerizes into metastyrol, a colorless, transparent solid which, unlike styrol, is not soluble in alcohol or in ether.

Oil of Asiatic Styrax

WHEN distilled with steam, Asiatic styrax yields only about 0.5 per cent of a volatile oil; with superheated steam more than 1 per cent. By treating the resin with caustic soda and subsequent distilling, much higher yields can be obtained, but these oils differ in chemical composition from normal styrax oils. Because of the very low yield from Asiatic styrax, volatile styrax oil is today distilled almost exclusively from the American balsam.

Physico-Chemical Properties

THE oil possesses a light yellow to dark brown color and an agreeable odor. The properties vary greatly according to the method of distillation employed. Its specific gravity is below 1 if the hydrocarbons predominate, higher than 1 if the oil contains more alcohols and cinnamic esters.

According to Gildemeister and Hoffmann[8], oils distilled from Asiatic styrax show constants varying between the following limits:

Specific Gravity	0.89 to 1.06
Optical Rotation	−38° to +0°30′
Refractive Index at 20°	1.53950 to 1.56528
Acid Value	0.5 to 33
Ester Value	0.5 to 130

Solubility—Soluble in 1 volume of 70% alcohol, opalescent by addition of 2 to 5 volumes of 70% alcohol. Soluble in any proportion of 80% alcohol, but the diluted solution often shows opalescence. Oils containing a high percentage of esters are less soluble.

(*Turn to Page 73*)

Chemical Composition

THE first investigations on oil of styrax date back more than one hundred years. The following constituents have so far been identified:

styrene (phenyl ethylene) $C_6H_5.CH = CH_2$ — The peculiar odor of styrax, which reminds of illuminating gas and petrol ether, is caused by this compound, as noticed by Simon.[9]

It can be identified as dibromide, m.p. 74°C.

styro-camphene (?) $C_{10}H_{16}O$ or $C_{10}H_{18}O$ — Van't Hoff[10] ascribed the optical rotation of styrax oil to this oxygenated compound, the structure of which remains unknown.

ethyl alcohol
benzyl alcohol (?)
phenyl propyl alcohol
cinnamic alcohol (styrone)
free and as
ethyl cinnamate
benzyl cinnamate
phenyl propyl cinnamate
cinnamyl cinnamate (styracin)

These alcoholds, especially phenyl propyl alcohol and cinnamic alcohol (formerly also called styrone), occur in the oil free and esterified with cinnamic acid. They were identified by von Miller[11] and by Laubenheimer.[12]

vanillin — Found in styrax oil by Dieterich.[13]

naphthalene — Isolated (m.p. 79°C.) by von Soden and Rojahn[14] in an oil obtained from styrax bark.

A later investigation by Tschirch and van Itallie[15] confirmed the above mentioned findings of von Miller and Dieterich.

NEWS

Toohy Leaves OPA

John J. Toohy, head of the soap, drugs and cosmetic section of the chemical and drug price section of the OPA, announced early last month that he expected to leave OPA around Oct. 1, and rejoin E. R. Squibb & Sons, New York. He left the firm to serve with the Office of Price Administration last March. Mr. Toohy will resume his duties as manager of distribution with Squibb.

Zusag Wins Wrisley Golf

Wm. Zusag of the Allen B. Wrisley Company's Chicago cost department, won the golf championship cup at the annual employees golf outing, when the toss of a coin decided the tie between Zusag and Wrisley B. Oleson, president of the company. It was the first time in a number of years that Mr. Oleson had failed to hold first place in the spirited competition. In all, 21 prizes, contributed by the company, were awarded. The affair was held at Gleneagles Country Club, near Chicago. A steak luncheon was provided by the company.

McGibney Addresses CD&CA

Donald C. McGibney, noted analyst and student of European and Near East affairs, was guest speaker at the September 30 luncheon of the Chicago Drug and Chemical Association, held at the Union League Club. Mr. McGibney, who previously addressed the association luncheon meeting in September, 1941, spoke on "Looking Ahead at the World Scene."

Buchner Joins Roberts

W. J. Buchner has joined Wm. J. Roberts, manufacturers and jobbers of industrial chemicals, Pittsburgh, as vice-president and sales manager.

Wood New P&G V. P.

Thomas J. Wood, general sales-manager, has been elected vice-president and director of Procter & Gamble Distributing Co., Cincinnati. He succeeds to the vacancy caused by the death of Clarence J. Huff. Mr. Wood has been with the firm since 1919 when he joined P&G as a salesman. Four years later, in 1923, he became manager of the district offices in Kansas City, and in 1928 was appointed western division manager.

THOMAS J. WOOD

Clerc Chemical Bankruptcy

The plant and property of Clerc Chemical Co., Doremus Ave., Newark, N. J., which was petitioned into bankruptcy recently by action of creditors, was disposed of last month by the trustee, Newton H. Porter, Jr., New York attorney. The assets were sold to Joseph Liebman, one of the original principals in the Clerc firm at a reported price of $18,600. The Clerc firm was organized to manufacture soaps and is understood to have received a contract for manufacture of a substantial quantity of salt water detergent for the U. S. Navy.

Deny Lever Wage Increase

Employees of the Lever Bros. Co., soap plant at Hammond, Ind., have been denied a request for a 10 cents an hour pay increase by a War Labor Board ruling, issued in Washington last month. Some 750 workers were affected.

Eagle Soap Co. Expands

Benjamin Simon, Eagle Soap Co., Brooklyn, recently purchased 20,000 square feet, including seven buildings, at 39-57 Pearl St. and 154-62 Plymouth St., Brooklyn, which Mr. Simon says he will use in about a year in connection with his soap business. At the present time, he is waiting for a railroad siding to be put through the property, and estimates it will take about a year to complete it. Eagle Soap Co., has also just opened a branch in Memphis, which will contain complete manufacturing, warehousing and shipping facilities. The Memphis branch is in charge of Mr. Simon's son-in-law, Mortimer Kahn.

E. G. Cliver, Former Soaper Dies

Erle G. Cliver, 60, former head of Tacony Soap Mfg. Co., and more recently with Rohm & Haas Co., died recently at his home in Langhorne, Pa. Mr. Cliver retired in 1925 from his soap company, but came out of retirement a few months ago to join Rohm & Haas Co. He is survived by his widow.

Seeks Flea Soap Supply

A reader of *Soap and Sanitary Chemicals* is interested in locating a private brand manufacturer of flea soap for dog washing. Manufacturers who are able to supply such a product may communicate through SOAP.

Fat Salvage Report

Over 150,000,000 pounds of household fats have been salvaged during the past year by American housewives, and the Army and Navy as the result of a drive conducted by the Committee of the Glycerine and Associated Industries to Salvage Waste Fats, Inc., according to a report recently made by Roscoe C. Edlund, secretary-treasurer of the committee and manager of the Association of American Soap and Glycerine Producers, Inc. The success with which the campaign met is indicated by comparative figures for the months of June, 1943 and August, 1942. In August, 1942, the committee reports, 3,016,338 pounds of waste fats were salvaged; in June, 1943, 8,601,839 pounds were officially recorded as having been turned into the renderers. However, due to the fact that not all renderers file monthly reports, and therefore collection figures are estimated at only 80 per cent of actual total collections, the complete figure for June, 1943 would run around 10,752,293 pounds.

The Committee of the Glycerine and Associated Industries to Salvage Waste Fats, Inc., was organized in the spring of 1942 to educate housewives to salvage and turn in to meat dealers their used cooking fats, most of which were formerly thrown out. Salvage of the estimated two billion pounds waste annually was made necessary by the shortage of fats and oils which followed the blocking of imports from Pacific areas seized by the Japanese. A total of 116 representatives of the soap and glycerine and fat-splitting and rendering industries support the fat salvage committee.

The 150 million pounds of waste fats that have been salvaged in the past year were brought in at a promotion cost of less than one half cent per pound. The cooperation of the various information services, press, radio and motion pictures was lauded by Mr. Edlund in his report.

Officers and directors of the Committee are: Roy W. Peet, Colgate-Palmolive-Peet Co., chairman; Grafton B. Perkins, Lever Brothers Co.; Don M. Pfeiffer, National Renderers Association, vice-chairmen; Roscoe Edlund, secretary-treasurer; Adrian F. Busick, attorney; and John J. Emery, Emery Industries; and Neil F. McElroy, Procter & Gamble Co.

Some Fat Reports Unfiled

WFA has announced that some users of fats and oils who are subject to the limitations under FDO-42 have failed to file reports on their use of fats and oils in the base period quarters (1940-41) as required. The announcement points out that the reports should have been filed not later than July 31 and that failure to do so subjects the user to penalties.

Soap for Meat Deal Hit

Armour & Co., Chicago, packers, were restrained last month by a temporary injunction from using "tying agreements" under which the firm is alleged to have forced customers to buy soap and soap powders in order to obtain meat. The injunction, signed by Federal Judge Philip Forman in Newark, N. J., was sought by Prentiss M. Brown, national head of the Office of Price Administration. Judge Forman directed Armour to show cause this month why the temporary injunction should not be made permanent. The OPA's complaint was accompanied by thirteen affidavits from retail butchers in several cities in New Jersey. It alleged that in September and October, 1942, Armour tried to sell meat supplies to retailers on the condition that they also buy soap and soap powders.

Rippie Diamond Technical Head

Diamond Alkali Company announces the appointment of Chas. W. Rippie, Ph.D., as supervisor of technical service, effective September 1. Dr. Rippie will make his headquarters in Painesville, Ohio, where the main works operations, together with research and development laboratories of the company are located. In addition to regular technical service, he will work in close collaboration with production, research and sales in establishing the new products which Diamond Alkali Company is adding to its present line.

Brillo Buys Gill Soap Plant

Brillo Manufacturing Company completed araringements on Sept. 17th for the purchase from the Thomas Gill Soap Company of their land and building located at 711 Kent Avenue, Brooklyn, comprising a land area of approximately 12,000 square feet and a building, three stories and basement, of 20,000 square feet. There were included in the purchase all of the storage facilities and equipment for the manufacture of soap.

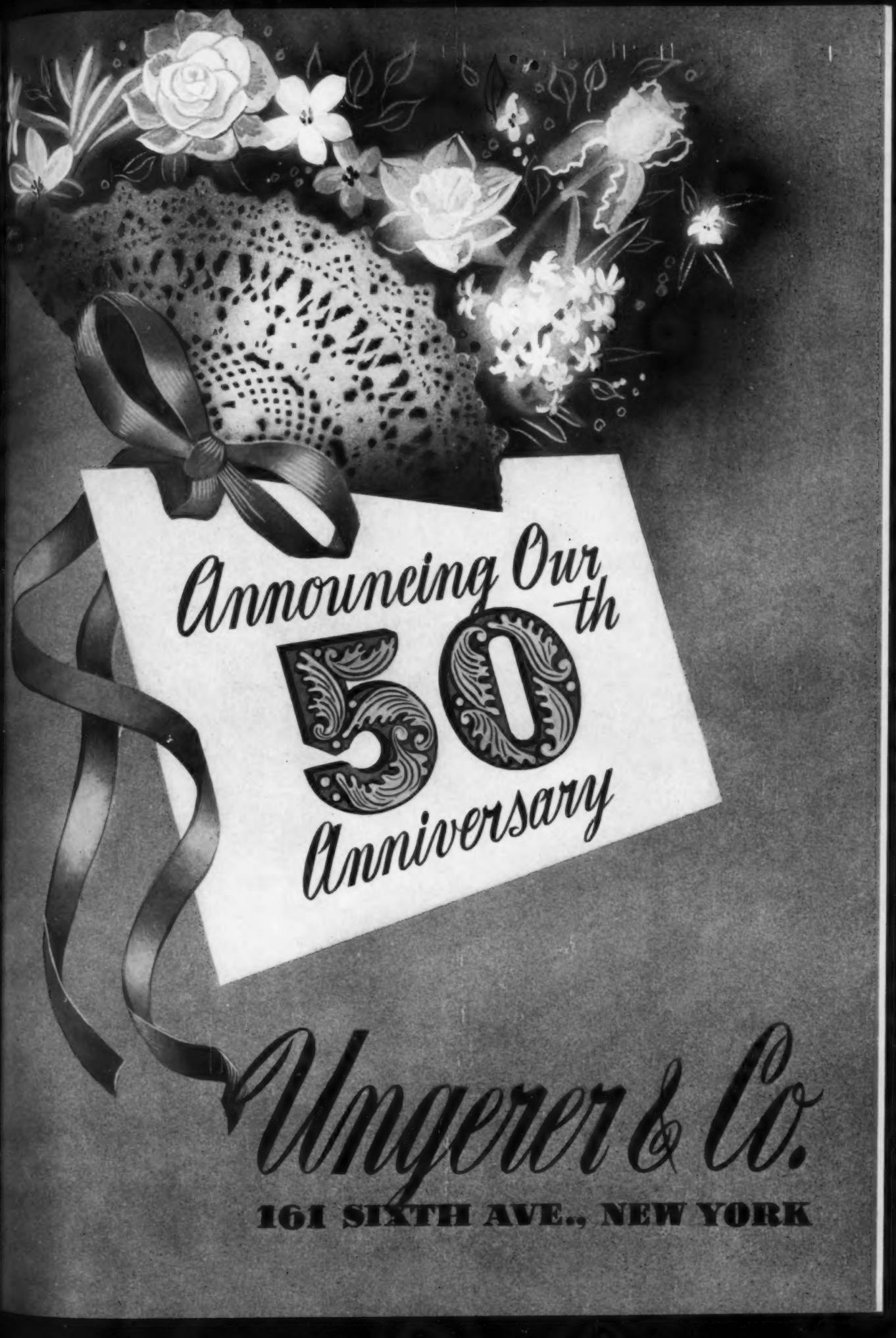
Due to the restrictions of WPB Order M-126, relating to housewife use of metal-fiber, the Brillo Manufacturing Company has expanded the production and sale of its "Brillo" cleanser soap and, requiring additional facilities, made the purchase of the plant and equipment of the Thomas Gill Soap Company for this purpose. The Brillo Company has also for some time been engaged in a development of a powdered soap and the newly acquired property will be utilized for the production of this new product.

At the present time, the Brillo Company owns its buildings at 205 Water Street, 200 Plymouth Street and 60 John Street, Brooklyn, containing over 115,000 square feet of space, where it is engaged in turning out government orders on metal-fiber for camouflage and abrasives for meeting government needs.

The Thomas Gill Soap Company will continue the production and sale of its specialized products at a new location and the sale of its "Johnson Foot Soap," which it has featured for many years.

Tin Salvage Reaches 1,000,000 Lbs.

Those toothpaste and shaving cream tubes that customers have been turning in for more than a year, have brought more than 1,000,000 pounds of vitally important tin into the nation's stockpile, according to W. M. Rose, President of the Tin Salvage Institute. While the metal is coming in at a high rate, Mr. Rose said, it is still most important that druggists continue to collect tubes and that wholesalers gather them from retailers and ship to the reclamation plant operated at Newark, N. J.


Announcing Our
50th
Anniversary
Ungerer & Co.
161 SIXTH AVE., NEW YORK

50th Anniversary Message fr

William P. Ungerer
Founder of the business,
President 1901 to 1907

William G. Ungerer
President 1907 to 1909

Frederick H. Ungerer
President and Treasurer

May we pause in this 50th year to express to our many friends, customers and contemporaries our sincere appreciation for their cooperation, their confidence and friendly helpfulness which has made the present organization possible. In this spirit we pledge our best efforts and utmost resources in the continuance of ever higher standards and progressive service to the industry.

(1893-1943)

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161 Sixth Ave.

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from the Ungerer Organization

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H. B. Moore,
3rd Vice Pres.,
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W. A. Bush,
Sales
Manager

G. V. Branigan,
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Chemist

W. H. Dunney,
Jr., Perfume
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W. H. Dunney,
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Perfume Specialties

Flavors

C. T. Perez New York

G. R. MacDonald Boston

50th Anniversary

UNGERER & COMPANY

161 Sixth Ave., New York

Carlier Continental Adv. Mgr.

R. R. Carlier has recently been appointed advertising manager of Continental Can Company. Mr. Carlier,

who has been assistant advertising manager of the company for the past six years, assumes the position formerly held by H. A. Goodwin who has been appointed director of sales development.

Facial Soap Use Increases

A 10% rise in the sale of facial soap by food stores during 1943 accompanied by a 2% decline in sale of such soaps in drug stores is indicated in a recent survey by Fawcett Publications, New York. The study also indicated that there has been an increase in the number of women washing their faces with soap and water rather than using face cream. Of the women queried, 64% used both soap and cream, 32.6% used soap only, and 3% used cream only.

Resume Fat Salvage Advertising

The paid advertising campaign behind the waste fat salvage program was reinstated last month by the Advertising Committee of the Association of American Soap & Glycerine Producers. Fat salvage newspaper advertising had been suspended on May 17 in anticipation of an early decision by the government on the proposal to give red points to housewives for each pound of salvaged fat turned in. The "points-for-fats" program has been approved by OPA, but the effective date of starting the new program has been delayed for one reason or another. It was the opinion of the advertising committee that resumption of the soap industry's advertising campaign could not be delayed any longer without adversely affecting fat collections. The campaign was thus resumed September 13 and will continue through the week of October 25 with funds already appropriated.

Restrict Wax Paper Use in Soap

The manufacture of waxed paper and its use in wrapping a number of products, including soap, was brought under more rigid control by issuance September 22 of General Conservation Order M-351 by the War Production Board. Use of waxed paper is now prohibited for wrapping soap when it is used in any fashion in addition to any other waxed paper wrapper. Laminated paper shall not be used except for a product for which it was regularly used prior to September 22, 1943. Schedule B of the order fixes maximum weights of paper for waxed paper wrappers for soap, as well as maximum wax content. Maximum weight of paper before waxing is set at 23 lbs. for inner wrappers, 37 lbs. for outer wrappers and 44 lbs. for laminated wrappers. Maximum allowable wax content is set at 30, 50 and 60 per cent for inner, outer and laminated wrappers.

Fred Theile in Hospital

Fred Theile, president of P. R. Dreyer Inc., New York perfuming material house, has been in Fairmount Hospital, Jersey City, since early last month. It took the doctors several days to decide just what was wrong with Fred. Finally they figured it was some sort of complicated bronchial ailment. He is better now but will not return to the office for several weeks.

Norda Bids on Chemical Co.

Creditors and stockholders of Carbo Chemical Co., 71 Paris St., Newark, N. J., in an order signed by Vice Chancellor Bigelow, were recently directed to show cause why Stewart A. Young, receiver, should not accept an offer from Norda Essential Oil & Chemical Co., New York, to buy Carbo's equipment for $5,000.

Ralph B. McKinney, who has just been appointed general manager of the Papermakers Chemical Department of Hercules Powder Co., as reported in Soap and Sanitary Chemicals *last month. Mr. McKinney was formerly assistant general manager of this department.*

Montreal Soap Veteran Dies

John Brady, 83, Montreal's oldest soap manufacturer, died of a heart attack at his home in Montreal, Canada, September 19. He was executive manager of Darling & Brady, Ltd., prior to his retirement several years ago, having succeeded his father in this post. Mr. Brady left a sister, Mrs. J. J. Speirs, as his nearest relative, his wife having died three years ago.

Final Chicago Group Golf Outing

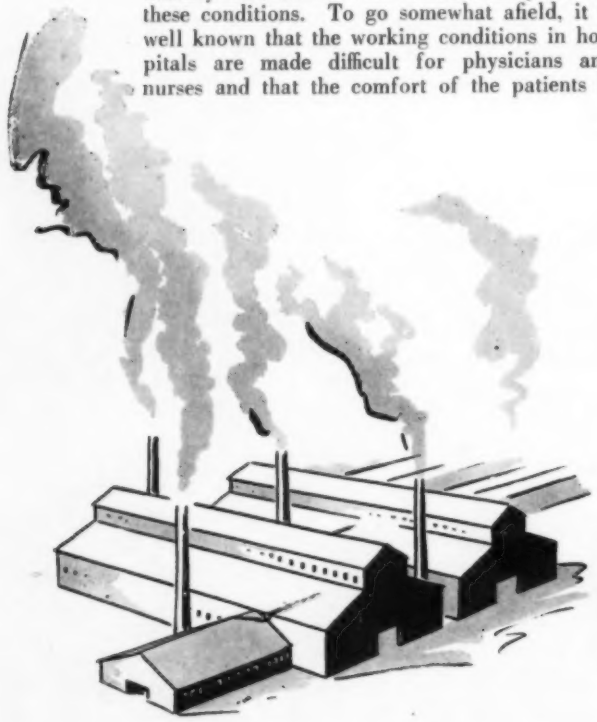
The last tournament of the season of the Chicago Drug & Chemical Association and the Chicago Perfumery Soap and Extract Association took place Sept. 28, at Rolling Green Country Club, Arlington Heights, Ill.

Restrict Paper Box Inventories

Users of folding and set-up boxes, including soapmakers, are not permitted to increase their inventories "of a particular size and type for a particular product" beyond 25 tons or a 90 day supply, whichever is the larger. The inventory restriction does not apply to boxes in transit on September 11.

Odor Control with NEUTROLEUM

THERE is reason to believe that in many industries, today, unpleasant odors — due, for example, to manufacturing operations or processing, to the mustiness of old, rehabilitated factory buildings, to nearby plant refuse, etc. — are taking a heavy but unsuspected toll in the efficiency and comfort of workers subjected to these conditions. To go somewhat afield, it is well known that the working conditions in hospitals are made difficult for physicians and nurses and that the comfort of the patients is affected by the nauseating odors characteristic of certain types of disease.



To control offensive odors is no longer a baffling problem. Almost any plant or factory superintendent can remedy such condition quickly and inexpensively merely by the proper use of NEUTROLEUM. A few drops of this remarkable odor neutralizer placed in an open receptical in various parts of the affected premises will cover up or mask some of the most objectionable and persistent odors for a prolonged period of time. It may be employed also in the form of an aqueous spray made of two ounces of WATER MISCIBLE NEUTROLEUM in one gallon of lukewarm water.

The simplicity, effectiveness and economy of using NEUTROLEUM for all types of odor control can best be demonstrated by actual use. We shall be glad to consult with and supply testing samples of NEUTROLEUM to any plant or organization confronted with a problem of this character. When writing, please give a full explanation of conditions in order that we may advise you most helpfully.

FRITZSCHE BROTHERS, Inc.

PORT AUTHORITY COMMERCE BLDG., 76 NINTH AVENUE, NEW YORK, N. Y.

BRANCH STOCKS

BOSTON CHICAGO LOS ANGELES ST. LOUIS TORONTO, CANADA MEXICO, D. F.

FACTORIES AT CLIFTON, N. J. AND SEILLANS (VAR) FRANCE

Sulfur-Sol Expands Sales

Sulfur-Sol Co., 509 N. LaSalle St., Chicago, is making use of radio time on Chicago stations and newspaper space to expand sales of "Sulfur-Sol" soap and "Sulfur-Sol" ointment for treatment of skin irritations. The soap, which utilizes colloidal sulfur and lanolin, is manufactured by a process, which permits the sulfur to act directly on the skin, according to company claims. Sales are made through drug and department stores.

British Toilet Goods Bans

A continuation of restrictions on British toilet goods manufacture has been effected though extension for two months of Toilet Preparations Order No. 2, British manufacturers were notified recently. The permitted quantities which British toilet goods makers are now allowed to produce stands at: powders—43.33 per cent of his supplies of powder in the base period; other toilet preparations: 13.33 per cent of his supplies of toilet preparations (excluding powder) in the base period or 333.6. 8d pounds whichever is greater. All other details of the order remain in force and those manufacturers who have joined in a concentration scheme will continue to get the benefit of such a scheme.

A further development in the British picture is the ban on the use of acetone in toilet preparations. All hair creams, brilliantines and other preparations which contain more than a fractional amount of this and similar products are banned. The use of petroleum products is banned from such toilet preparations. The acetone ban takes effect from Dec. 31, 1943; the petroleum ban from Feb. 29, 1944. Hair dyes, depilatories, and shampoos are excepted.

Controllers Elect Colgate Man

H. F. Elberfeld, vice-president of Colgate-Palmolive-Peet Co., Jersey City, N. J., was elected a vice-president of the Controllers Institute of America at the annual business meeting held September 21, at the Waldorf-Astoria Hotel, New York.

Present Magnus Portrait

A photograph of Percy C. Magnus, chairman of the board of the New York Board of Trade, was re-

cently presented to the board by the membership. Presentation ceremonies were held in the Sert Room of the Waldorf-Astoria on September 15. Mr. Magnus, head of Magnus, Mabee & Reynard, Inc., New York, has been an active figure in the Board of Trade for a number of years.

New Cosmetic Pricing Procedure

The Office of Price Administration last month set forth a method for uniform pricing of packaged cosmetics and packaged drugs which are currently being sold at distribution levels at non-uniform maximum prices. The procedure is designed to aid those manufacturers who wish to reduce their maximum prices and insure proportionately lower maximums at distribution and consumer levels. It was brought about by incorporation in Maximum Price Regulation 392 (Packaged Drugs) of Amendment No. 2, and in Maximum Price Regulation 393 (Packaged Cosmetics) of Amendment No. 2. The amendments went into effect on Sept. 20.

The Sept. 20 amendments permit a manufacturer of packaged cosmetics and drugs that are not new products to reduce his own selling prices and be assured that the reductions will be carried through to the consumer. Uniform maximum prices for resales by wholesalers and retailers may be set to reflect the reduction at the manufacturer's level, while keeping retailer's or wholesaler's percentage margins unchanged.

It is further provided by the amendment that a manufacturer undertaking reductions may use the previously established maximum prices for sales to governmental and institutional purchases or the lowest new maximum prices for sales to any wholesalers or retailers, whichever is lower. Manufacturers establishing maximum prices under the new pricing procedure are to file with the OPA a report showing the computation of the new prices similar to the report required in pricing new packaged cosmetics and drugs. The reported prices are subject to OPA review and adjustment. The provisions of the regulations requiring that the manufacturers notify resellers of the maximum prices and to mark the maximum retail price on the new packaged cosmetics and drugs (which are proprietary medicines) also apply to the articles set forth in the action taken Sept. 20.

Six Jarosz Children in Services

Six service stars hanging in the window of his home have brought unusual distinction to Wm. Jarosz, city salesman for 17 years with the Allen B. Wrisley Co., Chicago. Since January, 1942, Mr. and Mrs. Jarosz have seen their five sons and one daughter enter the armed services. Three of the boys are now in the army air corps, another in the Marines and the fifth is a First Lieutenant in the Medical Corps. Then, to make it 100 per cent, the daughter, Irene, entered the Army Nurses Corps, last March.

Hardesty Election Sought

William C. Hardesty, Wm. C. Hardesty Co., oil and chemical firm, New York, is reported being proposed as successor to Brigadier General Robert Johnson, who resigned recently as chairman of the Smaller War Plants Corp. Mr. Hardesty is chairman of the board and past president of the Smaller Business Association of New York, New Jersey and Connecticut. He has been active in promoting a larger participation of small plants in war work.

Outline Girls' Work Conditions

The U. S. Department of Labor, through its administrator of the Wage and Hour and Public Contracts Division, issued a warning early last month to holders of government contracts under the Walsh-Healey Act, reminding them of the penalty involved for violation of its child labor provisions. The reminder applies particularly to the specific working conditions under which girls between the ages of 16 to 18 may be employed. Failure to live up to the terms of the contract carries a $10 a day fine for each person for each breach. The conditions under which girls between 16 and 18 may be employed were set forth by the Secretary of Labor in granting an exemption for girls in that age group as follows: The work period is limited to 8 hours a day between the hours of 6 a.m. and 10 p.m. State laws governing hours of work for women which set stricter limits must be met. No girl under 18 may be employed in any operation, or occupation, which under the Fair Labor Standards Act or under any state law or administrative ruling is determined to be hazardous in nature or dangerous to health; nor can she be employed at less than the minimum hourly rate set by, or under, the Fair Labor Standards Act or the Walsh-Healey Public Contracts Act for the industry in which the exemption is granted. A specific and definite lunch period of at least thirty minutes must be regularly granted. The contractor must keep on file a certificate of age showing that the girl is at least 16 years old.

BIMS of Boston Golf

The first, last and only golf outing of the season for the BIMS of Boston, was held Sept. 20, at Woodlawn Country Club, Auburndale, Mass. Earlier in the summer, the BIMS were forced to give up the idea of a golf outing and substituted for it an "indoor-outing" at the University Club. Direct train facilities right to the club plus an easing of the gas pleasure driving ban made the fall outing possible.

Naval Station Recovers Soap

Great Lakes Naval Training Station near Chicago, is conducting a soap conservation program in connection with other salvage operations at this large navy training center. About 100,000 bars of soap are issued weekly. All discarded pieces are picked up, packed in drums in the salvage department's reclamation yard and returned to the manufacturers..

Frank McHugh NYQ V. P.

Francis J. McHugh, for the past 17 years associated with and more recently chairman of the executive committee operating New York Quinine & Chemical Works, Inc., Brooklyn, has just been made vice-president of the corporation. In recent years he was assistant to the late Francis J. McDonough, president of NYQ. NYQ executives now include: Irving McKesson, president; Donald McKesson, vice-president and treasurer; Francis J. McHugh, vice-president; Louis L. Pio, secretary and Frank J. Reid, assistant secretary.

Industrial Hygiene Course

The University of Michigan has announced a short course in industrial hygiene for plant safety personnel, to be held at the School of Public Health on the Ann Arbor campus, Oct. 19 to 21. The affair has been arranged at the request of the Michigan Industrial Hygiene Society in recognition of the inadequate hygiene staffs available to apply scientific knowledge of sanitation control measures in war industries.

Coal Dust Inhibitor

In order to allay coal, coke and ash dust, a new wetting agent known as "Kleen-Kol" has been introduced by S. E. Norcross of Bloomfield, N. J. The concentrate, added in minute quantities to coal-spraying water, is claimed to produce rapid dispersion of the solution throughout the coal pile, wetting and precipitating fine dust particles where water alone would be ineffective. Less than 1 per cent of moisture is added to the coal.

Violates Wage Law

Joseph George and the Clean-O Chemical Co., 1815 Westchester Ave., Bronx, N. Y., were restrained recently from violating the child labor and other provision of the Wage and Hour Law, under terms of a consent judgment signed by Federal Judge Samuel Mandelbaum, of the Southern District Court of New York. Clean-O Chemical Co. manufactures "Clean-O," a bleaching product and sells household ammonia and wax. In an action brought in Federal Court by John K. Carroll, Regional Attorney, on behalf of Katharine F. Lenroot, Chief of the Children's Bureau, U. S. Dept. of Labor, it was alleged that George and the firm violated section 12 of the Wage and Hour Law by employing two or more minors under the age of 16. The complaint also showed that the company violated overtime and record-keeping provisions of the Wage and Hour Law.

Russell G. Brown Dies

Russell G. Brown, manager of the Chicago office of Roure-Du Pont, Inc., New York essential oil house, died suddenly at his home in Chicago, Aug. 30. Like his brother Charles W. Brown, who survives him, Mr. Brown was a member of the Chicago Drug and Chemical Association. Funeral services were held at Lain & Sons, funeral home, Chicago, and interment followed at Cedar Park Cemetery, Sept. 3. Mr. Brown is survived by his widow and one daughter.

Akerite News Letter

Akerite Chemical Works, Inc., Chicago, is issuing a "Victory News Letter" that is published monthly by the executives and employees of the company. It is sent overseas to former employees in the services and contains items of news and inspiration for the boys. The first issue, which appeared recently, was composed of eight pages.

Ration Book Holder as Premium

Cudahy Packing Co., is currently promoting sales of "Old Dutch Cleanser" with a premium offer of a ration book holder for 10 cents, plus the picture from one label.

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Well over half of the first edition of SANITARY PRODUCTS, by Leonard B. Schwarcz, has already been sold out. At the present rate of sale the edition will be exhausted in the near future. Under present conditions it is hard to say when the book can be revised and reissued. If you want a copy of this valuable text, dealing with the manufacture, testing and use of insecticides, disinfectants, floor products, potash soaps, polishes, etc., better get one while the supply lasts. Ask for a descriptive folder if you are not familiar with this book. Every manufacturer and jobber and every pest control operator should have at least one copy.

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Soaps at Beauty Show

WOMEN war workers suffering from "mechanics hands" have brought a 30 per cent increase in business to beauty shops, according to reports made public at the 24th annual convention of the American Cosmeticians National Association in Chicago, Sept. 12 and 13. Skin diseases constitute 65 per cent of all occupational diseases among women war plant workers, Mrs. Ruth A. Crow, of Tulsa, Okla., secretary of the association, reported. "More time is lost from work on account of dermatitis than from any other occupational cause," said Mrs. Crow. The dermatitis, she asserted, is often caused, not by the substances encountered at work, but by the removal of these substances by methods harmful to the skin. Program discussions dealt with use of protective hand creams and other ways and means for treating the trouble by beauty parlor operators.

Jobbers of cosmetic supplies showed various private brands of beauty soaps in their exhibits, along with the more familiar products of various nationally known soap manufacturers. Consolidated Hair Goods Co., Chicago, showed for the first time at a trade show their "Fij-oil" soapless lather shampoo, packaged in 6 oz. and 2 oz. sizes for home use. While "Fij-oil" has been on the market ten years, distribution has, until six months ago, been limited to professional beauty parlor use in 5-gallon jugs, according to Harry Muller, company vice-president. The new package, he said, was developed to meet a demand for home use of the shampoo by beauty shop customers. The shortage of bottles and caps has limited sales for the present to the Chicago area.

The annual convention of the Beauty & Barber Supply Institute, Inc., brought several manufacturers of soaps, shampoos and other products to the Palmer House, Chicago, for a three-day showing of their lines last month. Due to the policy of the management none but paid-up members of the organization could visit the show. From the list of exhibitors appearing in the printed program, however, it was learned that among those making exhibits were the following: Amole Soap Co., Colgate-Palmolive-Peet Co., Conti Products Co., Davies Young Soap Co., F. W. Fitch Co., Laco Products Co., Middlebrooke Lancaster, Inc., Procter & Gamble Co. and J. B. Williams Co.

Chemical Salesmen's Golf Finale

H. R. Miller, Hercules Powder Co., Wilmington, Del., retained the championship cup at the third and final golf tournament of the Salesmen's Association of the American Chemical Industry, held Sept. 2, at Garden City Country Club, Garden City, L. I. Other winners included:

Members Low Gross—Class B; Ira P. MacNair, MacNair Dorland Co. Class C; W. C. Harmon, Calco Division American Cyanimid Co.

Members Low Net Class A; Fred Koch, Dow Chemical Co. Class B; J. B. Ferris, Niagara Alkali Co. Class C; Charles Douglas, Diamond Alkali Co.

Guest Low Gross—H. M. Schulman, Washine National Sands Co. Low Net; R. H. Potter, Potter Brothers.

High Gross Members—O. A. Sergeant, William D. Neuburg Co.; longest drive, R. L. Hutchins, Commercial Solvents Corp.; nearest pin, Al Wittenberg, Stroock & Wittenberg; least number of putts, Nelson Myers, Enequist Chemical Co; set of Jimmie Thompson woods, Frank Greene, National Aniline Division of Allied Chemical & Dye Corp; door prize, W. C. Harmon, Calco Chemical Division of American Cyanamid Co.

British Lux Dropped

Lux soap flakes, Lever Brothers' British counterpart of their American product of the same name and fame, has been withdrawn from the British market "owing to wartime conditions . . . until peace comes again." Lever Brothers, Port Sunlight, Ltd., in making the announcement stated in advertising copy, "Owing to wartime conditions, we regret we are no longer able to guarantee you the same high, consistent quality of Lux you knew before the war. For this reason we have decided to withdraw Lux from the market altogether until peace comes again."

Lux, which has been a leader in the washing suds market in Britain for many years, was backed by the complete resources of the large Lever Brothers marketing organization. It becomes the first major voluntary brand leader casualty of the war—entirely unconnected, according to reports, with any government pressure, since the British policy is to retain brand names in the soap field.

Unofficially, it is thought in the trade that Lever Brothers will not allow their brand reputation to die, but will continue to use "reminder" advertising to keep the Lux name before the public until such time as it is once more feasible to manufacture.

Ungerer & Company Fifty Years Old

UNGERER & CO., New York, well-known perfuming materials house, complete their fiftieth year in business this month. The perfuming background of the Ungerer family, however, dates back an additional thirty years with the coming to America from Switzerland after training in France as a perfumer of William Philip Ungerer, father of F. H. Ungerer, present head of the company. Mr. Ungerer, Sr. became chief perfumer for Colgate & Co. in 1872 and for twenty years was closely identified with the perfume department of that old American company. In poor health, he left for France in 1882, returning the following year to establish Ungerer & Co. and represent in America several leading French and Swiss essential oil and perfuming specialty producers.

F. H. UNGERER

KENNETH G. VOORHEES

Succeeding his father at Colgate's was William G. Ungerer, the eldest son, after training in Europe as a perfumer, but in 1895, he joined Ungerer, Sr. in the essential oil business. Within a few years, the elder son became one of the best-known perfuming experts in the United States and was a leader in the development of the then comparatively new modern art and science of perfuming. Shortly after, Frederick H. Ungerer, the younger son, joined the firm which was incorporated in 1901 with William P. Ungerer as president, William G. Ungerer as vice-president, and F. H. Ungerer as secretary-treasurer. Ungerer, the elder, died in 1907 and William G. became president, from which time, the two sons carried on and greatly expanded the business. William G. Ungerer, long one of the most popular and respected characters of the American perfuming materials industry, died in 1930 after having a few years previously been awarded the Legion of Honor by France for his many years work in raising funds to support the war orphans of Grasse.

Frederick H. Ungerer became president of the firm in 1930 and was faced with the prospect of piloting the firm through the depression years which followed and which he did successfully, materially expanding the scope and volume of the company's business over the past ten years. He is the present active head of the firm. Kenneth G. Voorhees, executive vice-president, joined Ungerer in 1932 with a background of merchandising and purchasing experience, and has since taken over purchasing and management duties. In 1937, Budd Aromatics Co. was consolidated with Ungerer & Co. and Ivan H. Budd, head of that firm, became a director of Ungerer and vice-president in charge of sales. With him, W. H. Dunney and W. H. Dunney, Jr., perfume chemists, joined Ungerer. H. B. Moore, for some years in sales, is the present vice-president and controller, W. A. Bush is sales manager, and George V. Branigan has been chief chemsist for the past twenty years.

In its early history, the offices and warehouse of Ungerer were located in downtown New York on Pearl Street in the old "essential oil district." Later the company moved uptown to W. 19th St. and then for many years was in its own building at 15 West 20th St. with its warehouse at 228 West 20th St., New York, where it is still located. In January, 1942, the firm took over larger office quarters in its present location at 161 Sixth Av., New York. Offices and warehouses are also maintained in pincipal cities thoughout the country.

TGA Starts Scientific Section

The Toilet Goods Association has established a new scientific section to expand the work formerly done by the scientific advisory committee and the board of standards of the association. H. D. Goulden, director of the TGA Board of Standards has been appointed temporary chairman. Election of permanent officers will be held at the regular annual association convention to be held in 1944. A special meeting of the scientific section is planned in January 1944 at which time future plans will be discussed.

Cosmetic Assn. Ends Golf Season

The Allied Drug & Cosmetic Association of Michigan, held its final golf tournament at the Birmingham Country Club, near Detroit on Wednesday, September 22. Three silver cups were awarded—Match Play Cup, won by E. E. Van Allsburg of Ecclestone Chemical Co.; Low Gross Cup won by H. P. Walmsley of Monsanto Chemical Corp., and the Low Net Cup, won by Jack La Rue of Magnus, Mabee & Reynard, Inc. The association awarded war bonds and defense stamps for additional prizes. This tournament ended a season of six competitions played on the fourth Wednesday of each month.

Wonder of the Western World

Few regions in America have had such a dramatic history as that which centers about Niagara. It was strategic territory from the time of its discovery by the LaSalle Expedition in 1678, in the struggles during the French and Indian Wars and the Revolution. Today it is still a strategic territory, in that it is an area of vast industrial activity from which America derives electric power and great quantities of materials, such as chemicals and other products essential to the successful waging of the war.

As a chemical company noted for its pioneering activities, Niagara Alkali Company carries on the traditions of this region through the stepped-up production of essential chemicals and energetic cooperation with the industries that use them.

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BIDS AWARDS

Low Marine Corps Bids

The following bids were received by the Marine Corps, Washington, D. C., in recent openings for miscellaneous supplies: 1.) 3.87c on 50,000 pounds detergent, dish washing compound f.o.b. Uhila, ... by Cunningham Cleanser Corp., New York; 2.) 4.09c on 40,000 pounds of the same item f.o.b. Quantico, Va., by the same firm; 3.) 4.3c on 50,000 pounds of the same item f.o.b. New River, N. C., by Cowles Detergent Corp., New York; and 4.) 4.4c on 60,000 pounds of the same item f.o.b. Parris Island, S. C. by Cunningham Cleanser Corp., New York. Safford Co., Burnsville, N. C. submitted the low bid of 10c on 1,800 pounds of scouring powder f.o.b. Philadelphia.

Special WFA Purchases

The following special purchases have been announced by the War Food Administration, Washington, D. C., in recent openings for miscellaneous supplies: 500 gallons Mill-O-Cide insecticide, Midland Laboratories, Dubuque, Iowa, at $3 a gallon; toilet soap: Lever Brothers, Co., Boston, 6,606 pounds at 18.651c per pound: 3,303 pounds at 20.699c: 14,375 pounds at 15.7739c and 15,312½ pounds at 15.6502c.

Treasury Supply Awards

In recent openings for miscellaneous supplies by the Treasury Department Procurement Division, Washington, D. C., the following awards have been made: 3,000 containers of shoe polish to Roman-Aetna Blacking Corp., Brooklyn, at 8c; 600 gallons of disinfectant to James Huggins & Sons, Malden, Mass., at 60c per gallon: 24,000 pounds of scouring compound Imperial Products Co., Philadelphia, at 4.25c per pound; 15,000 pounds paste soap in three pound containers Utility Co., New York, at 5.54c per pound; 285,000 pounds of soap powder to Unity Sanitary Supply Co., New York, N. Y. at 5c per pound and 18,750 pounds of grit soap to Conray Products Co., New York, N. Y., at 4.95c per pound.

P & G Navy Soap Bid

Procter & Gamble Distributing Co., New York, submitted a bid of 6.02c on 62,500 pounds (100,000 ten ounce bars) of laundry soap in a recent opening for miscellaneous supplies by the New York Navy Yard, New York.

Crystal Low On Green Soap

Crystal Soap & Chemical Co., Philadelphia, submitted a low bid of $594 in a recent opening by the Panama Canal, Washington, D. C., for 5,400 pounds of green soap.

New York Navy Bids

The following bids for miscellaneous supplies were received in recent openings by the New York Navy Purchasing Office, New York: 37,500 gallons of clearning liquid, Shell Oil Corp., New York, 11.32c and $1.23 for each drum; an unspecified quantity of cube or timbo powder, S. B. Penick & Co., New York, item 1.) 38.8c, item 2.) 38.9c, item 3.) 39.1c and item 4.) 41.4c; Gross Kelley Co., Las Vegas, New Mexico, item 1.) 57c, item 2.) 57c, item 3.) 57c and item 4.) 58c.

Post Office Bids

The following bids for miscellaneous supplies were received in recent openings by the Post Office Department, Washington, D. C.: 50,000 pounds of floating toilet soap to be delivered to Washington, D. C., Wm. Messer Corp., New York, 12.5c; 30,240 pounds of ordinary bar laundry soap to be delivered to Atlanta, Ga., Colgate-Palmolive-Peet Co., Kirkman & Son, Division, Brooklyn, 5.3c; Manufacturers Chemical Co., Cambridge, Mass., 9.5c and Procter & Gamble Distributing Co., Baltimore, 5.54c.

Marine Corps Disinfectant Awards

James Huggins & Son, Malden, Mass., submitted low bids of 40c on 25,025 gallons of cresolic disinfectant in 55-gallon steel drums, f.o.b. Philadelphia, and 46c on 15,000 gallons of cresolic disinfectant in five-gallon drums in a recent opening by the Marine Corps, Washington, D. C., for miscellaneous supplies. In the same opening Baird McGuire, Holbrook, Mass., submitted a bid of 65c on 10,000 gallons of the disinfectant in one-gallon cans, which was accepted.

Salt-Water Soap Bids

In a recent opening by the Panama Canal, Washington, D. C., the following bids for an unspecified quantity of salt-water soap were received: Procter & Gamble Distributing Co., Ivorydale, O., $5,302.50; Manufacturers Chemical Co., Paterson or Newark, N. J., $10,312.50 and U. S. Soap Mfg. Co., Philadelphia, $10,500.

Low Cleaning Compound Bids

Among the low bids received in a recent opening by the Department of Justice, Washington, D. C., for miscellaneous supplies were those of Du Bois Co., Cincinnati, 21c; Missouri-Kansas Chemical Co., Kansas City, Mo., 18c; and Peerless Chemical Co., Detroit, Mich., 14c on 260 pounds of cleaning compound.

Carnauba Wax Substitute

A wax prepared by melting together 85 parts of shellac wax with 10 parts of beeswax, heating to 210-230° C., gradually adding five parts of sal dammar (Shorea robusta), and straining and cooling, had d_{15} 0.993, a melting point of 83° C., an acid value of 6.3, and a saponification value of 85.6. It complied with the specifications for carnauba wax, for example in making carbon papers. S. V. Puntambekar. Forest Research Inst., Dehra Dun, Indian Forest Leaflet 19, 3 pp.; through Chem. Abs.

NEW TRADE MARKS

The following trade-marks were published in the September issues of the *Official Gazette* of the United States Patent Office in compliance with Section 6 of the Act of September 20, 1905, as amended March 2, 1907. Notice of opposition must be filed within thirty days of publication. As provided by Section 14, fee of ten dollars must accompany each notice of opposition.

Trade Marks

SPAR-KILL—This in extra bold upper case letters for liquid floor cleanser. Filed June 12, 1942 by D. H. Buster Chemical Co., Kansas City, Mo. Claims use since Mar. 1, 1942.

MEX—This in extra bold upper case letters for a floor, wall and woodwork cleaning compound. Filed Mar. 27, 1943 by United Gilsonite Laboratories, Scranton, Pa. Claims use since June 1, 1933.

VICTORY WOOL—This in bold upper case letters for polishing wool —i.e., fine wood shavings (excelsior) impregnated with a detergent for cleaning and polishing metal cooking utensils. Filed May 13, 1943 by G.M.P. Corp., Milwaukee, Wis. Claims use since Apr. 29, 1943.

SPORTSMAN — This in bold upper and lower case script letters for shaving soap in a decorative container. Filed May 18, 1943 by John Hudson Moore, Inc., New York. Claims use since Apr. 19, 1943.

RESISTO — This in bold upper case letters for floor, woodwork and painted or varnished surfaces cleaner. Filed May 26, 1943 by United Sanitary Chemicals Co., Baltimore, Md. Claims use since June 1940.

WETORDRY—This in extra bold upper case letters for coated abrasives. Filed May 26, 1943 by Minnesota Mining & Manufacturing Co., St. Paul, Minn. Claims use since July 6, 1921.

SHANGRILA—This in upper and lower case bold script letters for soaps. Filed July 5, 1943 by Chemical Center Corp., New York, N. Y. Claims use since Mar. 1, 1943.

BESCO—This in reverse upper case letters in the form of a cross within a lined disc that bears the words Bessire & Company, Inc., products for ammonia, corrosive sublimate tablets, coumarin, essential oils, glycerine, Indian, Tragacanth and Arabic gums, roach powder and rat exterminator, fly spray, insect killer, rat poison, insect exterminators, and rat exterminators. Filed Jan. 5, 1940 by Bessire & Co., Inc., Indianapolis, Ind. Claims use since 1918.

TRIGGER—This in bold upper and lower case letters for insect repellents and insecticides and bite, sting and itch relievers. Filed June 7, 1943 by Allen-Crowl Co., Toledo, O. Claims use since July 1, 1941.

Mark in the form of a seven-sided shield with stars and bars for lye. Filed June 15, 1943 by The Pennsylvania Salt Manufacturing Co., Philadelphia, Pa. Claims use since 1925.

DEETEE—This in bold upper case letters within quotation marks for crude wax and wax blends. Filed Mar. 28, 1942 by Distributing and Trading Co., New York. Claims use since Oct. 15, 1941.

LAN-O-SHEEN — This in bold upper and lower case letters for multipurpose cleaning powder. Filed May 11, 1943 by Lan-O-Sheen Co., St. Paul, Minn. Claims use since Apr. 1, 1940.

ABSORBO—This in bold upper case letters for powder for removing oil and grease. Filed May 19, 1943 by Fidelity Chemical Products Corp., Newark, N. J. Claims use since Mar. 29, 1943.

REO—This in bold upper case letters for shoe polish. Filed June 4, 1943 by Diamond Products Manufacturing Corp., New York. Claims use since Dec. 30, 1942.

GRE-SOLVENT — This in bold upper case letters in an oval bearing the words "Protective Cream" for skin protective compound. Claims use since Jan. 8, 1943.

CLINIC — This in upper and lower case reverse letters on overlapping inverted, black and white triangles on which the words "Jamieson" and "standardized" and "recognized" and a drawing of a mortar and pestle for mosquito repellent, ointment for minor skin irritations, etc. Filed Mar. 15, 1943 by C. E. Jamieson Co., Detroit, Mich. Claims use since May 25, 1932.

WARCO—This in upper case letters within a diamond outline for tooth paste, etc. Filed June 5, 1943 by Warich Drug Co., Richmond Hill, Long Island, N. Y. Claims use since Jan., 1942.

AIR-WICK—This in lower case bold letters above the fanciful drawing of a chef blowing above a bottle with a wick protruding for a deodorant. Filed June 14, 1943 by Seeman Bros., Inc., New York. Claims use since May 18, 1943.

EXCELCIDE—This in bold upper case letters for insecticides. Filed July 1, 1943 by The Huge Co., St. Louis, Mo. Claims use since Aug. 3, 1939.

DRYAD — This in extra bold lower case letters for a deodorant. Filed July 1, 1943 by Andrew Jergens Co., Cincinnati, O. Claims use since May 15, 1943.

AIRTONA—This in bold lower case letters for household deodorant. Filed July 7, 1943 by Airtona Co., Boston, Mass. Claims use since Feb. 5, 1941.

SHAWNEE—This in bold upper case letters above the fanciful drawing of an Indian head for insecticides. Filed July 6, 1943 by Kentucky Color & Chemical Co., Louisville, Ky. Claims use since Jan. 1, 1940.

PLAS-TI-PAD — This in bold upper case letters running upwards through two half segments of a circle for cleaning and scouring pads with and without being impregnated with soap or other detergent material. Filed Dec. 18, 1942 by Plas-Ti-Fibre Corp., Chicago. Claims use since Oct. 11, 1942.

SNO-BOL—This in bold upper case letters for bottled bowl cleaner.

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Currently, Dow's nationwide manufacturing facilities are producing more than 500 chemicals indispensable to American Industry and Victory. There is scarcely a branch of industrial activity which is not being served by one or more Dow chemicals.

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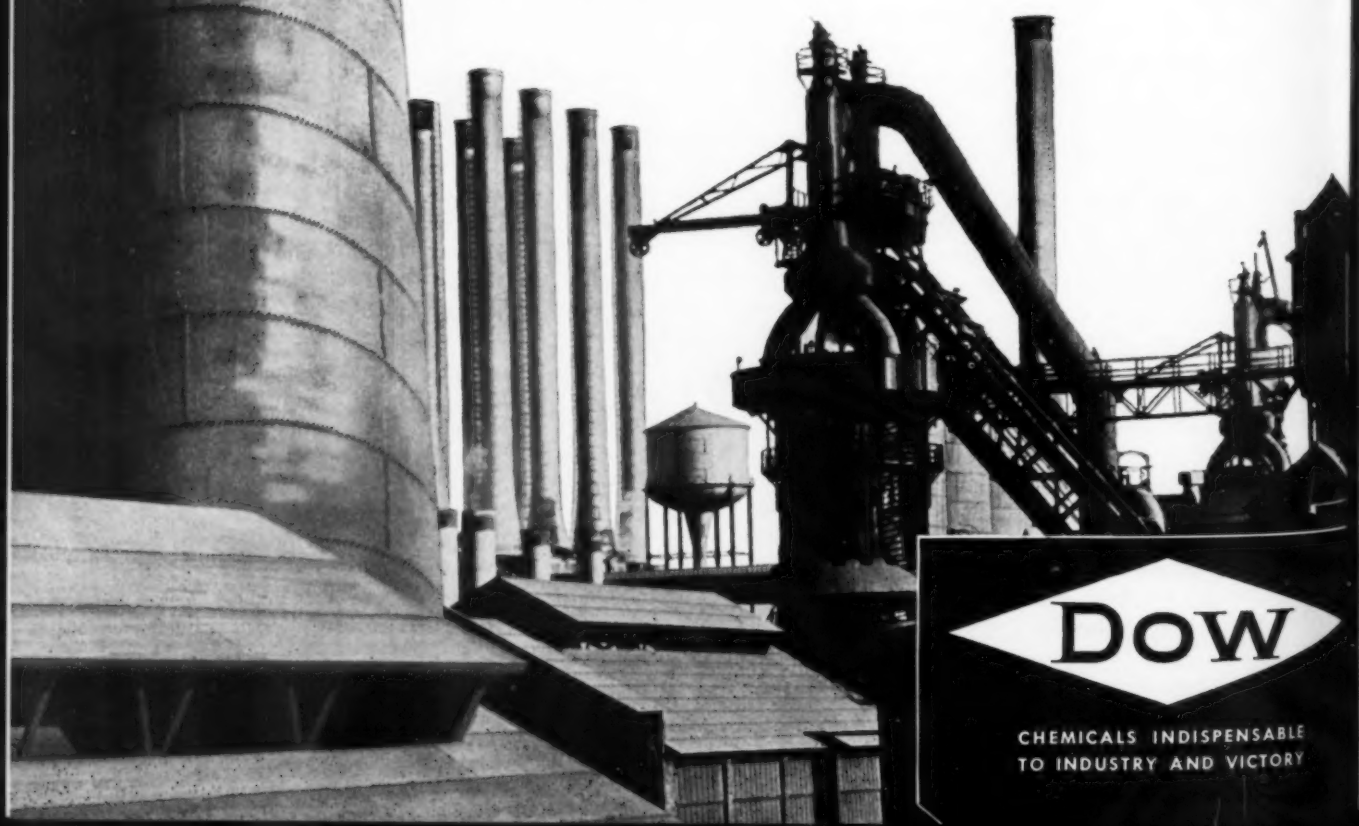

Filed Mar. 24, 1943 by Good Housekeepers Products Co., Hazel Park, Mich. Claims use since July 15, 1939.

ODOR-GO—This in extra bold upper case letters for deodorant. Filed Aug. 24, 1942 by J. E. McBrady & Co., Chicago. Claims use since 1916.

Cut away drawing showing man standing beside seated women in a box in a theatre overlooking a screen on which the words "Max Factor, Hollywood, Presents A Gift From Hollywood," for cleansing creams, etc. Filed June 5, 1943 by Max Factor & Co., Los Angeles, Calif. Claims use since May 17, 1943.

B-T-F — This in extra bold upper case letters on a rectangular block screen for chemical disinfectant having incidental cleaning purposes. Filed June 30, 1943 by Koch Chemical Co., Winona, Minn. Claims use since Feb., 1941.

PENNEX — This in bold upper and lower case script letters for household cleaning and polishing liquids. Filed Apr. 20, 1943 by Pennes Products Co., Pittsburgh, Pa. Claims use since 1928.

KOREX — This in extra bold upper case letters for household cleaning compound and powder rug cleaner. Filed May 24, 1943 by The Korex Co., Ferndale, Mich. Claims use since Dec. 15, 1942 for stove cleaner and since Mar. 10, 1943 for rug cleaner.

C.M.T. — This in extra bold upper case letters for an industrial cleaner having incidental water softening properties. Filed May 26, 1943 by United Sanitary Chemicals Co., Baltimore, Md. Claims use since June, 1940.

ARLINE — This in upper and lower case bold script letters for soap. Filed June 28, 1943 by Stix, Baer and Fuller Co., St. Louis, Mo. Claims use since Aug. 30, 1941.

PLEXI GLYST — This in bold upper case letters for a glass cleaning preparation. Filed July 5, 1943 by Turco Products, Inc., Los Angeles, Calif. Claims use Mar. 1, 1943.

DERMEX — This in upper and lower case bold script letters for skin protective ointments and creams. Filed Apr. 9, 1943 by Richard Hudnut, New York. Claims use since Apr. 1, 1943.

NO-PER-VEX — This in upper case bold letters for varnish preparation for finishing of floors, etc. Filed Aug. 2, 1943 by Turco Products, Inc., Los Angeles, Calif. Claims use since Apr. 1, 1935.

MIN-MUM—This in bold upper case italic letters for polish and wax finishing compound for aircraft, automobiles, household uses, etc. Filed July 5, 1943 by Turco Products, Inc., Los Angeles, Calif. Claims use since Mar. 1, 1938.

Trade Marks Granted

403,017. Insecticide. Filed by Chapman & Rodgers, Inc., Philadelphia, Pa., Oct. 12, 1939. Serial No. 424,464. Published Jan. 30, 1940. Class 6.

403,030. Liquid typewriter roller and type cleaner. Filed by Mohawk Chemical Products, Inc., Philadelphia, Pa., Oct. 15, 1942. Serial No. 456,219. Published June 22, 1943. Class 4.

403,035. Facial cleansing cream. Filed by Boncilla Laboratories, Inc., Indianapolis, Ind., Jan. 21, 1943. Serial No. 458,060. Published June 22, 1943. Class 6.

403,058. Deodorant and disinfectant. Filed by Rose Chemical Co., Newark, N. J., Apr. 3, 1943. Serial No. 459,603. Published June 22, 1943. Class 6.

403,064. Chemical preparation for fumigating tobacco. Filed by Tobacco States Chemical Co., Cave City, Ky., April 12, 1943. Serial No. 459,801. Published June 22, 1943. Class 6.

403,065. Skin protective creams and ointments. Filed by Richard Hudnut, New York, Apr. 13, 1943. Serial No. 459,837. Published June 22, 1943. Class 6.

403,066. Skin protective ointments and creams. Filed by Richard Hudnut, New York, Apr. 13, 1943. Serial No. 459,838. Published June 22, 1943. Class 6.

403,072. Aromatic chemicals for use in soaps, etc. Filed by Dow Chemical Co., Midland, Mich., Apr. 16, 1943. Serial No. 459,922. Published June 22, 1943. Class 6.

403,073. Aromatic chemicals for use in soaps, etc. Filed by Dow Chemical Co., Midland, Mich., Apr. 16, 1943. Serial No. 459,923. Published June 22, 1943. Class 6.

403,096. Insecticide. Filed by the Selig Co., Atlanta, Ga., Apr. 30, 1943. Serial No. 460,311. Published June 22, 1943. Class 6.

403,098. Washing powder. Filed by Pittsburgh Chemical Laboratory, Pittsburgh, Pa., May 3, 1943. Serial No. 460,391. Published June 22, 1943. Class 4.

403,205. Preparation for the treatment of athlete's foot. Filed by Simons and Heiden, Chicago, July 14, 1941. Serial No. 445,337. Published June 29, 1943. Class 6.

403,218. Dog repellents. Filed by Magitex Co., Inc., Saco, Me., Feb. 11, 1943. Serial No. 458,476. Published July 6, 1943. Class 6.

403,222. Cleansing creams. Filed by Parfumes Charbert, Inc., New York, Mar. 11, 1943. Serial No. 459,028. Published July 6, 1943. Class 6.

403,247. Cleaning compound for industrial cleaning of metals, etc. Filed by Turco Products, Inc., Los Angeles, Calif., Mar. 24, 1943. Serial No. 459,322. Published July 6, 1943. Class 4.

403,248. Abrasive and cleaning material in sheet, strip, belt, etc. form. Filed by The Carborundum Co., Niagara Falls, N. Y., Mar. 27, 1943. Serial No. 458,400. Published July 6, 1943. Class 4.

403,268. Fur cleaning compounds. Filed by United Chemical Works, Chicago, Apr. 5, 1943. Serial No. 459,632. Published July 6, 1943. Class 4.

403,279. Antiseptics and germicides. Filed by The Norwich Pharmacal Co., Norwich, N. Y., Apr. 21, 1943. Serial No. 460,062. Published July 6, 1943. Class 6.

403,293. Spray composition to disinfect and deodorize. Filed by Magitex Co., Inc., Saco, Me., Apr. 28, 1943. Serial No. 406,240. Published June 29, 1943. Class 6.

403,300. Disinfectant and fungicide. Filed by West Disinfecting Co., Long Island City, N. Y., Apr. 30, 1943. Serial No. 460,318. Published June 29, 1943. Class 6.

403,401. Bubble bath. Filed by Thermopin Laboratories, Inc., New York, Apr. 13, 1943. Serial No. 459,850. Published July 13, 1943. Class 6.

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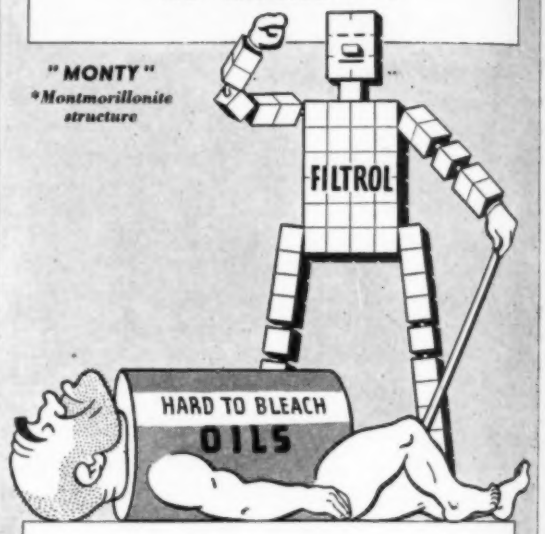

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THE ACTIVATED AGENT SPEEDS PRODUCTION — CONSERVES MATERIALS

RAW MATERIAL MARKETS

As of September 29, 1943

OPTIMISM about the future oils and fats supply picture characterizes the feeling of dealers, soapers and apparently even government agency officials alike. By raising allowable fats and oil quotas used in the manufacture of soap beginning in the fourth quarter, the WPB, inferentially, at least, gave tacit admission that the oils and fats picture had improved considerably. How could a soap maker raise his fats and oils use if the fats and oils weren't available? At about the same time the soap conservation order, apparently timed to coincide with the quota boost, was issued. It requires the use of rosin and various extenders in amounts varying from two to 15 per cent, depending on the type of soap being manufactured.

Although there is to be a slight cut in the amount of high lauric acid oils released by the CCC to the industry in the fourth quarter, the continuing release of these oils, especially coconut gives rise to much of the optimism regarding the whole situation. An increase in the percentage of coconut oil used in the manufacture of soap in the second quarter over the first quarter of this year indicates an easing of what had been an extremely tight situation. The increased use of coconut in the second quarter came at a time when total fats and oils use and soap production were both at lower levels.

Domestic Picture Brightens

Figures released by the Department of Agriculture recently showed that total production of oils and fats from domestic materials in the first six months of 1943 had increased 11 per cent over 1942. In pounds 5,280 million were produced in 1943's first half as against 3,450 million pounds in the first six months of 1942. This increase, however, was not without exception. A decrease of 107 million pounds in the production of inedible tallow and greases, was recorded. Soybean oil production increased 345 million pounds. News of record cattle arrivals at Chicago stockyards plus the continued increase of Federally inspected hog slaughter are two big factors pointing toward a further easing of the inedible tallow and grease picture.

Oils and fats importations have grown in direct ratio to the decrease in ship sinkings and under the stimulus of the increasing rapidity of the production of ships. The Mediterranean situation, and the expansion of our operations in the Pacific, bringing as they do new oil producing islands under U. S. control, have been largely responsible for the measure of hopefulness held out for the continuing improvement in the whole oils and fats situation, particularly as it affects soap makers.

Red Squill Arrives

Although red squill has not been available for several weeks, a somewhat smaller quantity than had been expected arrived in New York late last month. However, the WPB has requested that it not be used for civilian needs until the Board has had the opportunity to bio-assay it and determine what quantity will be required by the official government agencies and the armed forces who have need for it. The Official Wildlife Service of the Department of the Interior is cooperating in its distribution for municipal, county and state rat control program. It is further reported that commercial relations are developing in the Mediterranean theater and that the point is now reached where further stocks of red squill are either awaiting shipment or are actually in transit.

Caustic Soda Scarce

Caustic soda has been reported as in a more acutely short supply than in the first World War. According to stories published here, the most serious shortage seems to be in New Orleans, where, it is said, "a brisk demand is reported for caustic soda in solid form, but the bulk of the business is for shipment out of New Orleans, and it is exceedingly difficulty to obtain any soda at that port." Lend-Lease commitments, a large home consumption rate, and the manpower shortage are all factors in reported shortages, stories claim. Deliveries of caustic soda in solid form are said to be from 60 to 90 days behind schedule.

Essential Oil Developments

The establishment of maximum ceiling prices at both grower-producer and dealer levels on natural oil of peppermint, natural oil of spearmint, redistilled oil of peppermint, and synthetic methyl salicylate was accomplished last month through issuance of MPR 472 and amendment 2 to MPR 353 by the OPA.

Maximum prices of $5.50 a pound for peppermint oil and $3.50 a pound for oil of spearmint were set as growers' ceilings, while ceiling prices of $6 a pound for natural oil of peppermint, $4 a pound for natural oil of spearmint and $6.35 a pound for USP redistilled oil of peppermint were fixed for dealers.

Methyl salicylate, other than that obtained by distillation from birch or wintergreen, was put under specific cents-per-pound ceilings, effective September 30. Producers' prices range from 35 cents per pound in 500 pound drums to 72 cents in one-quarter pound containers in less than 25 pound lots. Resellers' prices range from 40 cents to 92 cents per pound.

RAW MATERIAL PRICES

(As of September 28, 1943)

Minimum Prices are for car lots and large quantities. Price range represents variation in quotations from different suppliers and for varying quantities.

Chemicals

Acetone, C. P., drums	lb.	$ .08½	$ .09
Acid, Boric, bbls., 99½%	ton	109.00	126.00
Cresylic, drums	gal.	.81	.83
Low boiling grade	gal.	.81	.83
Muriatic, C. P., carboys	lb.	.06½	—
Oxalic, bbls.	lb.	.11¼	.12½
Alcohol, Ethyl, drums	gal.	11.94½	11.98
Complete Denat., SDI, dms., ex.	gal.	.62	.64
Alum. Potash lump, bbls.	lb.	.04½	—
Ammonia Water, 26°, drums	lb.	.02¼	.02½
Ammonium Carbonate, tech., drums	lb.	.08½	.09¼
Bentonite	ton	11.00	16.00
Bleaching Powder, drums	100 lb.	2.50	3.60
Borax, pd., bbls., bags	ton	45.00	71.00
Carbon Tetrachloride, car lots	gal.	.60	1.17
L. C. L.	gal.	.80	1.27
Cresol, U.S.P., drums	lb.	.09½	.11
Cresote Oil	gal.	.15½	—
Feldspar, works	ton	14.00	20.50
Formaldehyde, bbls.	lb.	.05½	.06¼
Fullers Earth	ton	8.50	15.00
Glycerine, C.P., drums	lb.	.18¾	.19¼
Dynamite, drums	lb.	.18¼	.18¾
Saponification, drums	lb.	.12¾	.14¾
Soap lye, drums	lb.	.11½	—
Lanolin, U.S.P., hydrous, drums	lb.	.32	—
Anhydrous, drums	lb.	.33	—
Lime, live, bbls.	ton	6.25	14.50
Mercury Bichloride, drums	lb.	2.34	2.39
Naphthalene, ref. flakes, bbls.	lb.	.08	.08¼
Orthodichlorbenzene	lb.	.07	.08
Paradichlorbenzene, drums	lb.	.11	.15
Petrolatum, bbls. (as to color)	lb.	.021	.07¾
Phenol (Carbolic Acid) drums	lb.	.10	.10¾
Pine Oil, drums	gal.	.55	—
Potash, Caustic,solid	lb.	.06¼	.06¾
Flake, 88-92%	lb.	.07	.07½
Liquid, 45% basis	lb.	.03⅛	.03½
Potassium Carbonate, solid	lb.	.06½	.06¾
Liquid	lb.	.05½	.05¾
Pumice Stone, coarse	lb.	.03⅝	.04¼
Rosins (net wt., ex dock, New York)—			
Grade D to H	100 lb.	3.91	4.59
Grade I to N	100 lb.	4.59	4.73
Grade WG to X	100 lb.	5.10	5.55
Rotten Stone, dom., bags	lb.	.0128	.019
Silica	ton	17.00	38.00
Soaps—			
Tallow Chip, 88%	lb.	.11	.11⅝
Powder, 92%	lb.	.11⅝	.12
Powdered, White Neutral	lb.	.25½	.42
Olive Oil Paste	lb.	.40	—
Shampoo Base	lb.	.18	.20
Liquid Concentrate, 30-32%	gal.	.75	.79
Soda Ash, cont., wks., bags, bbls.	100 lb.	1.15	3.25
Car lots, in bulk	100 lb.	.90	—
Soda Caustic, cont., wks. solid	100 lb.	2.30	3.15
Flake	100 lb.	2.70	5.70
Liquid, tanks, 47-49%	100 lb.	1.92½	1.95
Soda Sal., bbls.	100 lb.	1.20	1.40
Sodium Chloride (Salt)	ton	14.20	18.00
Sodium Fluoride, bbls.	lb.	.07	.08
Sodium Bisulfate	100 lb.	2.20	2.40
Sodium Metasilicate, anhyd.	100 lb.	4.00	5.30
Granulated	100 lb.	2.50	3.55
Sodium Pyrophosphate	100 lb.	5.28	6.60
Sodium Silicate, 40 deg., drum	100 lb.	.80	1.20
Drums, 52 deg. wks.	100 lb.	1.40	1.80
Tar Acid Oils, 15-25%	gal.	.27½	.29½
Triethanolamine	lb.	.19	.20
Trisodium Phosphate, bags, bbls.	100 lb.	2.70	4.15

Oils — Fats — Greases

Babassu, tanks, futures	lb.	.1110	Nom.
Castor, No. 1, bbls.	lb.	.1300	.1455
No. 3, bbls.	lb.	.1375	.1425
Coconut (without excise tax)			
Manila, tanks, N. Y.	lb.	.0835	—
Tanks, Pacific Coast, futures	lb.	No Prices	
Copra, bulk, coast	lb.	No Prices	
Corn, tanks, West	lb.	.12¾	—
Cottonseed, crude, tanks, mill	lb.	.12¾	—
PSY, futures	lb.	.13⅞	.14⅛
Fatty Acids—			
Corn Oil, tanks, Chicago	lb.	.14	.14½
Coconut Oil, tanks, Twitchell, Chi.	lb.	.18	.18½
Cotton Oil, tanks, Chicago	lb.	.14	.14½
Settled soap stock, Chicago	lb.	.03⅞	.04
Boiled soap stock, 65%, Chi.	lb.	.04⅞	.05
Foots, 50%, Chicago	lb.	.03½	.03¾
Castor Oil, split, tanks, N. Y.	lb.	.20¾	.21¼
Linseed Oil, split, tanks, N. Y.	lb.	.1530	—
Distilled	lb.	.21	.21½
Myristic acid, distilled, tanks, N.Y.	lb.	.19	.19½
Palm Oil, white tanks, N. Y.	lb.	No Prices	
Single distilled	lb.	No Prices	
Soybean Oil, split, tanks, N. Y.	lb.	.1175	—
Distilled	lb.	.1390	.1400
Red Oils, bbls., dist. or sapon	lb.	.1325	.1425
Tanks	lb.	.12½	—
Stearic Acid, saponif.			
Double pressed	lb.	.15⅞	.16⅞
Triple pressed	lb.	.18⅝	.19⅝
Greases, choice white, tanks	lb.	.08⅞	—
Yellow	lb.	.08¼	—
Lard, city, tubs	lb.	.1400	—
Linseed, raw, bbl.	lb.	.1530	—
Tanks, raw	lb.	.1490	—
Olive, denatured, bbls., N. Y.	gal.	4.10	4.20
Foots, bbls., N. Y.	lb.	No Prices	
Palm, Sumatra, cif. New York, tanks	lb.	No Prices	
African, tanks, ex. ship	lb.	.08¼	Nom.
Palm, kernel	lb.	No Prices	
Peanut, crude, tanks, mill	lb.	.13	Nom.
Soya Bean, domestic, tanks, crude	lb.	.11¾	Nom.
Stearin, oleo, bbls.	lb.	.1061	—
Tallow, special, f.o.b. N. Y.	lb.	.08½	—
City, ex. loose, f.o.b. N. Y.	lb.	.08⅝	—
Teaseed Oil, crude	lb.	.29	Nom.

(As of September 28, 1943)

Essential Oils

Almond, Bitter, Artificial	lb.	$ 3.50	$ 3.75
Bitter, F.F.P.A.	lb.	5.25	5.50
Sweet, cans	lb.	2.25	2.40
Anise, cans, U.S.P.	lb.	3.50	3.60
Bay, 55-60% phenols, cans	lb.	1.60	1.90
Bergamot, coppers	lb.	32.00	Nom.
Artificial	lb.	2.25	6.50
Birch Tar, rect., cans	lb.	—	—
Crude, cans	lb.	—	—
Bois de Rose, Brazilian	lb.	4.75	5.00
Cayenne	lb.	—	—
Cade (juniper tar), drums	lb.	1.35	1.40
Cajeput, tech., drums	lb.	—	2.10
Calamus, cans	lb.	—	—
Camphor, Sassy, drums	lb.	—	—
White, drums	lb.	—	—
Cananga, native, cans	lb.	17.00	17.50
Rectified, cans	lb.	18.25	20.00
Cassia, Redistilled, U.S.P.	lb.	10.50	12.00
Cedar Leaf, cans	lb.	1.10	1.85
Cedar Wood, light, drums	lb.	.75	1.00
Citronella, Java, drums	lb.	—	—
Citronella, Ceylon, drums	lb.	1.02	1.05
Clove, U.S.P., cans	lb.	1.80	2.00
Eucalyptus, Austl., U.S.P., cans	lb.	1.20	1.25
Fennel, sweet, cans	lb.	3.60	—
Geranium, African, cans	lb.	30.00	Nom.
Bourbon, cans	lb.	24.00	—
Turkish (Palmarosa)	lb.	5.25	5.50
Hemlock, cans	lb.	1.20	1.25
Lavender, 30-32% ester, cans	lb.	9.00	9.25
Spike, Spanish, cans	lb.	4.25	4.35
Lemon, Ital., U.S.P.	lb.	—	Nom.
Cal.	lb.	3.25	—
Lemongrass, native, cans	lb.	1.55	1.75
Linaloe, Mex., cases	lb.	3.85	—
Nutmeg, U.S.P., cans	lb.	5.25	5.50
Orange, Sweet, W. Ind., cans	lb.	6.00	6.25
Italian cop	lb.	8.00	Nom.
Distilled	lb.	1.00	—
California, expressed	lb.	1.30	—
Origanum, cans, tech.	lb.	2.80	3.25
Patchouli	lb.	8.00	8.50
Pennyroyal, dom.	lb.	—	—
Imported	lb.	3.15	3.25
Peppermint, nat., cans	lb.	6.00	—
Redis., U.S.P., cans	lb.	6.35	—
Petitgrain, S. A., cans	lb.	1.80	1.90
Pine Needle, Siberian	lb.	3.00	3.25
Rosemary, Spanish, cans	lb.	2.25	2.30
drums	lb.	2.10	2.15
Sandalwood, dom., dist., U.S.P.	lb.	5.85	6.25
Sassafras, U.S.P.	lb.	1.85	2.00
Artificial, drums	lb.	1.75	1.85
Spearmint, U.S.P.	lb.	—	3.40
Thyme, red, N. F.	lb.	3.25	3.50
White, N. F.	lb.	3.50	3.75
Vetiver, Java	lb.	42.00	50.00
Ylang Ylang, Bourbon	lb.	—	—

Aromatic Chemicals

Acetophenone, C. P.	lb.	$ 1.55	$ 1.60
Amyl Cinnamic Aldehyde	lb.	—	—
Anethol	lb.	2.25	2.40
Benzaldehyde, tech.	lb.	.45	.55
N. F. VI	lb.	.85	2.75
Benzyl, Acetate	lb.	.59	Nom.
Alcohol	lb.	.63	.75
Citral	lb.	4.75	5.00
Citronellal	lb.	2.75	3.25
Citronellol	lb.	6.00	7.00
Citronellyl Acetate	lb.	—	—
Coumarin	lb.	2.75	3.25
Diphenyl oxide	lb.	.43	.50
Eucalyptol, U.S.P.	lb.	3.25	3.40
Eugenol, U.S.P.	lb.	2.75	3.25
Geraniol, Soap	lb.	2.50	3.00
Other grades	lb.	3.50	4.00
Geranyl Acetate	lb.	—	—
Heliotropin	lb.	5.25	Nom.
Hydroxycitronellal	lb.	7.25	8.75
Indol, C. P.	lb.	28.00	30.00
Ionone	lb.	2.75	3.95
Isoborneol	lb.	.81	.90
Iso-boryl acetate	lb.	.80	.95
Iso-Eugenol	lb.	—	—
Linolool	lb.	6.75	8.25
Linalyl Acetate	lb.	5.50	7.25
Menthol, natural	lb.	—	—
Synthetic, U.S.P.	lb.	13.00	19.00
Methyl Acetophenone	lb.	—	—
Anthranilate	lb.	2.20	2.35
Paracresol	lb.	—	—
Salicylate, U.S.P.	lb.	.40	.92
Musk Ambrette	lb.	4.00	4.45
Ketone	lb.	4.15	4.60
Xylol	lb.	1.40	1.80
Phenylacetaldehyde	lb.	5.00	6.00
Phenylacetic Acid	lb.	1.85	1.90
Phenylethyl Alcohol	lb.	2.10	2.50
Rhodinol	lb.	—	—
Safrol	lb.	1.70	1.85
Terpineol, C.P., dra.	lb.	.40	—
Cans	lb.	.43	—
Terpinyl Acetate, 25 lb. cans	lb.	.87	—
Thymol, U.S.P.	lb.	3.00	Nom.
Vanilin, U.S.P.	lb.	2.35	2.75
Yara Yara	lb.	1.80	1.85

Insecticide Materials

Insect Powder, bbls.	lb.	.29	.30
Pyrethrum Extract			
20 to 1	gal.	5.90	6.00
30 to 1	gal.	8.85	9.00
Derris, powder—4%	lb.	.31	—
Derris, powder—5%	lb.	.35	—
Cube, powder—4%	lb.	.31	—
Cube, powder—5%	lb.	.35	—
Squill, red, dried	lb.	.85	.88

Waxes

Bees, white	lb.	.57	.63
African, bgs.	lb.	.3750	—
Refined, yel.	lb.	.5250	.6050
Candelilla, bgs. (crude)	lb.	.38	—
Carnauba No. 1, yellow	lb.	.8325	.8925
No. 2, N. C.	lb.	.7575	.8175
No. 3, Chalky	lb.	.7125	.7725
Ceresin, yellow	lb.	.13½	.18
Montan Wax, bags	lb.	.45	.46
Paraffin, ref., 125-130	lb.	.0520	.0560

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PRODUCTION SECTION

A section of SOAP devoted to the technology of oils, fats, and soaps published prior to Jan. 1, 1932, as a separate magazine under the title, Oil & Fat Industries.

Coating Soap Granules

MANY types of materials may be used as a coating on soap granules to strengthen them and prevent formation of soap dust. Formation of dust in a package of soap granules is increased by drying out of the soap. A moisture content of 10-20 per cent is normally present in typical forms of granulated soaps at the time of packing. As the soap dries, the granules become friable and shatter to form dust.

A coating material may be hygroscopic, withdrawing moisture from the atmosphere. A hygroscopic material, however, must not be present in such a proportion as to cause lumping or sticking together of the original particles, whose small size it is desirable to maintain for rapid solution. Preferably such coating materials should not be particularly soluble in the soap itself, since they would then tend to diffuse into the soap granules rather than remaining on the surface.

Oleaginous-type materials appear to be particularly suitable for the purpose. Polyhydric alcohols are desirable compounds to use as coating agents. Under conditions such that the relative humidity is as low as 30 per cent, polyhydric alcohols such as glycerol, ethylene glycol, diethylene glycol, sorbitol and mannitol are satisfactory for preventing the dusting of soap.

Both organic and inorganic phosphates including dipotassium phosphate, potassium methyl and ethyl phosphates are satisfactory hygroscopic coating materials. Dipotassium phosphate is very effective at relative humidities in excess of 30 per cent. The presence of an alkyl group such as a methyl or ethyl group in place of a potassium atom, results in compounds which will retain their fluidity at extremely low humidities. Other phosphates of the type R_3PO_4, where R represents the same or different radicals are suitable; the radicals may be phenolic, alkyl, or hydroxy aliphatic radicals, or derivatives of such compounds. Examples are tricresyl phosphate, tributyl phosphate, dibutyl phenyl phosphate and phosphate esters of glycol ethers. Compositions chemically dissimilar but physically similar, which may be used, are high-boiling refined white mineral oils.

Hygroscopic substances which are conductors have the additional advantage of preventing the formation of static charges on soap particles. By rendering the surfaces of the particles conductive, they reduce the tendency of the dust to remain in suspension in air, thus reducing the tendency to cause sneezing on the part of the users of the coated granules. Substances which may be used for this purpose include glycerol, dipotassium phosphate, sodium potassium ethyl phosphate, triethanolamine ethyl phosphate, water-soluble sulfonated oils and lithium chloride. The water-soluble sulfonated oils are particularly useful since they are in themselves detergents.

Other materials may be used which serve primarily to strengthen the soap granules structurally. Preferably these substances should be insoluble in the soap, but either water-soluble or water-dispersible. If the coating compositions are water-insoluble, the soap granules must not be completely covered with them or they would not dissolve in water. A typical composition for this purpose is methyl cellulose. Higher esters than methyl are much less water-dispersible. Another suitable agent is polyvinyl alcohol. This is quite adhesive and may be used in a very small proportion. A low-polymerized product is water-dispersible. Corn or potato starch, or dextrins, may also be used to add strength to the granules. They assist in maintaining plasticity.

Only small quantities of a coating material are required, for example, 1-2 pounds of an ethylene glycol polymer sold as "Carbowax" may be sufficient to treat 100 pounds of a silicated soap containing 64 per cent of anhydrous soap.

The coating material may be applied to the soap granules in various ways and at any convenient time between the formation of the granules and the packing. By a preferred method the coating materials are atomized

and the soap granules allowed to fall through the atomized coating material. It is desirable to maintain the finest possible mist of the coating agent. A series of repeating treatments has been found effective in obtaining a dust-free product. The coating composition may also be applied by spraying in a rotary drum through which the soap granules are tumbled. Lever Brothers & Unilever Ltd. British Patent No. 553,735; through *Perfumery & Essential Oil Record* 34, 203-4 (1943).

Sulfonation Process for Oils

A sulfonation method for aliphatic compounds such as oils, fats and fatty acids lowers the time required for reaction and enables easy control of the temperature. This results from bringing the liquid reagents into intimate contact in an atomized condition. A gaseous coolant such as air is meanwhile passed through the reaction chamber.

A reaction vessel is provided, and means for separately spraying the liquid sulfonating agent and the liquid to be sulfonated, as oppositely directed jets, into the upper part of the vessel. A cooling gas such as air is circulated upward through the vessel. A jacketed vessel may also be used, with circulation of cooling water through the jacket.

By this process the heat of reaction is rapidly and practically entirely removed. The reaction proceeds to completion and may be carried out with practically no more than the theoretically required amount of sulfonating agent. Fraser & Fraser, and K. J. A. Partisch. British Patent No. 553,212.

Hydrolyzing Fats

In the countercurrent process for hydrolyzing fats, a method is provided of maintaining a constant pressure in the upper part of the reaction chamber by supplying water vapor to a vapor space communicating with the chamber, thus forming a vapor cushion. Victor Mills, to The Procter & Gamble Co. British Patent No. 546,654.

Analysis of Oil Emulsions

Commercial oil emulsions, which may or may not contain suspended solids, are analyzed by first distilling off any water-immiscible solvent. Benzene is then added and distilled with continuous return, carrying with it the water which does not return to the sample. This avoids formation of troublesome emulsions during the conventional extractions of the oil phase. This procedure is sufficiently longer than the conventional extraction to be inadvisable for simple oil emulsions if they are readily extractable with ether. The aqueous distillate contains any alcohol present.

By centrifuging if necessary, and evaporation of benzene, the oil is recovered without undue oxidation. The solid residue is then separated by conventional methods into alcohol-soluble, chloro-hydrocarbon-soluble, water-soluble, and mineral fractions for separate analysis. Amine emulsifiers are determined on another portion of the original sample but all other determinations are carried out on the single sample.

Improved methods for analysis of water-base wax dispersions provide for precipitation by acid, followed by separation and approximate identification of resins, wax, amines, etc. Frank M. Biffen and Foster Dee Snell. *Ind. Eng. Chem.*, Anal. Ed. 15, 517-19 (1943).

Linseed Oil Glycerides

By submitting 70 grams of linseed oil to chromatographic fractionation it is possible to isolate linoleo-dilinolenin (eight double linkings), and a mixture of trilinolenin (nine double linkings) and linoleo-dilinolenin. These fractions are in addition to those containing glycerides with 7, 6, 5, and 4 double linkings previously indicated. No evidence of a glyceride containing less than four double linkings is found. By determining the thiocyanogen value of the mixture of highly unsaturated glycerides, it is possible to calculate the thiocyanogen value of linolenic acid. The value obtained of 163.2 agrees closely with those found by recent workers who have isolated linolenic acid by different means. There seems to be no doubt that linseed oil contains more linolenic and oleic acids and less linoleic acid than was previously supposed. F. T. Walker and M. R. Mills. *J. Soc. Chem. Ind.* 62, 106-9 (1943).

Washing Studies

Experiments were carried out on the effects of washing and bleaching cotton and linen fabrics in a stainless steel laundry machine of the rotating-drum type. The scouring solutions were made with soap, fatty alcohol sulfate, or fatty-acid condensate in hard or soft water, with or without the addition of sodium hypochlorite or perborate. The results lead to the following conclusions: In scouring without a bleaching agent, the destructive action on the fabric is increased by the combination of hard water and soap. When bleaching agents are included, hard water has a protective action. Wear-resistance is reduced most by washing in hard water and soap, and to a lesser extent with hard water and fatty alcohol sulfate, while scouring with soft water appears to improve it. E. Honegger and A. Schnyder. Melliand Textilber, 23, 177-85; through Chem. Abs.

Preferred Iodine Value

Experiments on linseed and sunflower oils indicate that the Rosenmund-Kuhnhenn method for determining the iodine number of oils is to be preferred. This procedure gives results agreeing well with those of the Hanus and Kaufmann methods, while Wijs' method invariably gives high results. The procedure is rapid and the reagent easily prepared and of good stability. V. S. Govindarajan. *J. Indian Chem. Soc., Ind. & News Ed.* 3, 193-7; through Chem. Abs.

Stabilizing Tall Oil

A material containing stable resin acids is obtained by heating a tall oil containing an unstable resin-acid component including Steele's abietic acid with 0.1-3 per cent of iodine at a temperature of 100-240 degrees for 1-2 hours until Steele's abietic acid has substantially disappeared. T. Hasselstrom, 50 per cent to G. & A. Laboratories, Inc. U. S. Patent No. 2,311,386.

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U.S.I. CHEMICAL NEWS

October ★ A Monthly Series for Chemists and Executives of the Solvents and Chemical Consuming Industries ★ 1943

Anhydrous Ethanol Finds New Uses in Vital War Jobs

Expanding Future Predicted for Product Pioneered by U.S.I.

For years, anhydrous ethanol has been used in the making of dyes, pharmaceuticals, antifreeze (Super Pyro) and as a solvent in resin and nitrocellulose compositions.

War in the tropics, and the urgent need for large quantities of anti-malarials, have changed this picture radically. For both quinacrine (atebrin) and plasmoquin, the now-famous substitutes for quinine, are dependent on anhydrous alcohol at certain stages in their production. To visualize the magnitude of this one use alone, it is necessary only to realize that this country today is producing quinacrine at the rate of 1,200,000,000 tablets per year — the equivalent of 50 per cent more than the world's total prewar supply of quinine.

Synthesis of Sulfa Drugs

Not only in the manufacture of anti-malarial drugs is anhydrous alcohol finding new uses. Many chemical reactions which cannot be carried out in 190 proof ethanol become practical in anhydrous. Such reactions, for example, are currently being used in the synthesis of the newer sulfa drugs, sulfadiazene, sulfamerizine, and sulfamethazine. They have served, too, in greatly simplifying the production of vitamins B_1 and B_6.

As a solvent, anhydrous ethanol is acquiring importance in still other fields. An interesting new process for soap manufacture, in which the recovery of glycerol is greatly simplified, uses anhydrous alcohol. This helps satisfy the huge demand for glycerol in munitions and protective-coatings manufacture. Anhydrous alcohol is essential as a solvent to compensate for the water content of the low-proof ethanol used in wetting down SS nitrocellulose.

Many, if not all, of these uses for anhydrous ethanol will continue to grow with the coming of peace. Others will undoubtedly appear. All will amply justify U.S.I.'s pioneering effort, back in 1922, in introducing commercial anhydrous alcohol to the American market at a price only slightly higher than that of regular 190 proof.

What's in a Name?

Four different spellings of "Atebrin" currently appear in the literature about this new anti-malarial. "Atebrin" say both the American and British *Chemical Abstracts*. "Atebrine" says *Thorpe's Dictionary of Applied Chemistry*. "Atabrin" says *The Merck Index*. "Atabrine" says the *United States Dispensary*. On top of this, chemists call it quinacrine hydrochloride — or 4 amino-1-diethyl amino pentane 3-chloro-7-methoxy-acridone, for short.

Resin-Improved Red Lead Primer Protects Billions in War Equipment

Paint for Ships and Military Equipment of "Compelling Importance" in War, Says Navy

An unseen protector for America's great Maritime fleet, as well as for other implements of war valued in billions, has gone on duty as a result of an important improvement in paint formulation using alkyd resins. Today's *red lead primer*, on an alkyd base, widely used as an under coat for ships and other metal surfaces exposed to corrosive conditions, is saving extra man-hours as well as "saving-the-surface."

From U.S.I.'s Stroock & Wittenberg Division has come much of the resin progress raising the protective qualities of red lead primer, as well as other naval and military paints. S&W "Aroplaz 1328,"* for example, is a widely used alkyd constituent of paints meeting Army, Navy and Maritime specifications. In the Maritime primer (Specification MC52A1), it provides durability, flexibility and dull sheen. Sudden temperature changes, salt water spray, and even deformation of the surface may be encountered without opening cracks in the coating. The bond to the base metal is unusually tenacious. At the same time, fast drying is not sacrificed . . . a vitally important factor in today's shipbuilding.

Finish Coat for Battleships

The widely-used Navy finish coat (Specification 52-R-13) is another important paint to which "Aroplaz" gives great durability. Used on both outside and inside surfaces, it has the good brushability and drying characteristics needed where time is at a premium. Retention of the exact shade of color selected for maximum safety of the ship and non-reactivity with the necessary pigments, is a further strong point for "Aroplaz" resins.

(*Continued on next page*)

* Reg. U. S. Pat. Off.

New Equipment Design Speeds Vitamin Extraction

Fish oils are first saponified with aqueous ethanol-caustic soda. The vitamin-containing unsaponifiable fraction is then extracted countercurrent with an immiscible solvent $(CH_2Cl)_2$, in a specially-designed cylindrical vessel. The vessel, described in a British Patent is fitted with a revolving shaft carrying partly semicircular, partly semielliptical baffle discs. This affords small clearance with the vessel on one side, wider clearance on the other. The discs are staggered so that solvent entering at the bottom is forced to follow a tortuous path up through the soap solution.

New Mothproofing Agent

A patent has been granted for a mothproofing composition consisting of a solution of a guanidine salt, with *p*-tert-amylphenol or a fatty acid in an organic solvent. Solubility of the salt is enhanced by the use of a substance such as *n*-butyl alcohol.

To protect America's "bridge of ships" against the ravages of drenching rains, salt spray and scorching sun, shipyards are using thousands of gallons of tenacious new red lead primer formulated with S&W resins.

October ★ **U.S.I. CHEMICAL NEWS** ★ 1943

Improved Red Lead Primer

(Continued from preceding page)

Resins Improve Duck Coating

In still another application, S&W resins find themselves close to the front lines as a constituent of a protective coating for cotton duck (meeting Jeffersonville Q.D. Specification 242). In the tropics, particularly, where rain, sun, humid heat and mold growth would mean quick decay for unprotected canvas, this coating with a combination alkyd-hard resin base has a vital job to do on tents, hospital sidewalls, and the like. An important characteristic of the resin combination (Aroplaz-Arochem) is its compatability with chlorinated paraffin, which is included in the formula to keep the coating non-flammable.

One measure of the importance of paints in the war — and of the production demands for resins being made on the Stroock & Wittenberg Division of U.S.I. — can be obtained from recent figures released by the U. S. Navy Department, which state that some 50,000 carloads of paint are used on American men-of-war alone! The paint for one battleship would cover a fence 5 feet high — 273 *miles* long!

Foresight in the expansion of facilities for resin manufacture by U.S.I. has been a highly important factor in increasing the volume as well as the protective quality of paints for war. The highly specialized job of producing alkyds by combining phthalic anhydride, a fatty acid or an oil and glycerine is being carried out continuously under complete automatic control at one modern plant. For the production of ester gums, maleics and other resins in which natural rosin is a raw material, another new U.S.I. plant operates day and night in the heart of the Southern Pine country, with the wood rosin itself piped in from an adjacent producer.

Military paints, ranging all the way from stencil paint to spar varnish — from airplane "dope" to the familiar lusterless olive drab which marks the "jeep" the world over — are being formulated with one or more of S&W's six types of resins. These are:

"S&W" ESTER GUM — all types.

CONGO GUM — raw, fused and esterified.

AROPLAZ — alkyds.

AROFENE — pure phenolics.

AROCHEM — modified types.

NATURAL RESINS — all standard grades.

Granulated Soaps Kept Dust-Free by Spray Treatment

As granulated soaps lose moisture, the individual granules tend to break down into a fine dust which is annoying to the user. This difficulty is overcome by spraying the granulated soap with small quantities of certain polyhydric alcohols or other materials which act as hygroscopic agents and binders, according to a British Patent recently issued to a prominent soap manufacturer.

The spray must be carefully applied so as to hold the individual granules together without causing lumping. A material which is nonsoluble in the soaps is also of advantage, as it tends to coat the surface of each granule rather than being absorbed to a point where increased quantities are required.

Agents specifically mentioned are glycerol, ethylene glycol, diethylene glycol, sorbitol and mannitol. Also alkyl phosphates ($MRHPO_4$) in which M is an alkali metal and R an alkyl group.

A New Oxidant for Vat and Sulphur Dyes

Sodium chlorite, a new oxidizing agent used for bleaching cotton and other cellulose fibres, is reported to be valuable in developing vat and sulphur dyes.

Dyes are first reduced with sodium hydrosulfite to make them soluble. After absorption by the fabric, they must be oxidized to restore their original color. Chlorite is applied either in hot sodium bicarbonate or acetic acid solution. The chlorite is reduced to common salt which is easily removed.

The new process is said to speed up output of khaki, olive-drab and other cotton goods as much as 30 per cent, to simplify reproduction of colors, to produce more absorbent, softer, better-rinsing goods.

Non-Toxic Treatment For Insulin Hypoglycemia

Acetopyruvic acid, prepared from ethyl sodium acetone oxalate, is reported to provide protection against death by insulin hypoglycemia. Its action suggests a possible conversion to glucose during a critical demand on blood sugar. The drug is said to be nontoxic in moderate doses and easily absorbed from the alimentary canal.

TECHNICAL DEVELOPMENTS

Further information on these items may be obtained by writing to U.S.I.

Bonding of steel or light alloys, with a strength exceeding riveting, is said to be possible with a new synthetic resin adhesive. The process is also said to be effective in bonding metals to dissimilar products such as wood, plastics, and leather. **(No. 739)**

U S I

A mastic flooring material, especially suitable for areas where static electricity is a hazard, is announced. Easily applied over present floors, it is reported to provide an electrically-conductive surface which is easily cleaned, resistant to hard wear and heavy wheel loads. **(No. 740)**

U S I

A potash fish oil soap, available in limited quantities, is suggested as a carrier for insecticides or for use in commercial soap manufacture. **(No. 741)**

U S I

A new preservative for pharmaceutical and cosmetic products, reported to combine high efficiency in low concentration with extreme solubility in water, is announced. The preservative is said to be colorless and odorless. The manufacturer also announces another new preservative for products containing oils, fats, and alcohols. **(No. 742)**

U S I

A new paint spray gun, in which critical materials are limited to the air nozzle and needle valve, is announced. Nozzle design is said to prevent clogging, clean easily, and permit pattern adjustment from round to flat. **(No. 743)**

U S I

A new non-rubber sealing tape, stated to be both waterproof and non-toxic, is being recommended for sealing food, medicine and other consumer goods packages. **(No. 744)**

U S I

A new alcohol, (hydroabietyl) is now being offered as a paper coating, as a holding agent for china wood oil in varnish, and as a wetting agent for dispersing pigments in vehicles or during grinding. The new alcohol is valuable also as a plasticizer for protein film formers. **(No. 745)**

U S I

A luminous tape has been developed for indicating the location of aisles, machines and other important points during blackouts or power failures. The tape is reactivated, after service in the dark, by exposure to light from ordinary incandescent lamps. **(No. 746)**

U S I

Combustion tests, at temperatures up to 1000°F., are facilitated by a new electrically-heated, multiple-unit furnace. Originally designed for carbon determinations on gasoline cracking catalysts, the furnace is said to be adaptable for many other organic combustions. **(No. 747)**

U S I

A new boiler coating is offered to provide greater protection against both corrosion and fungus growth. The coating is said to retain its plasticity, and resistance to "craze," indefinitely. **(No. 748)**

Dermatitis Prevention

PROTECTIVE creams and lotions, unlike protective clothing, possess the added value of taking dirt and chemical agents with them on removal, but they do not furnish as adequate protection as gloves. They rub off to some extent during work and they are not always properly or regularly applied.

Protective applications must be selected for each type of industrial exposure. Oily substances such as a mixture of hydrous wool fat and castor oil, are best for protection against commercial and industrial organic solvents that act as degreasing agents by dissolving the natural protective oil layer on the skin. A cream containing boric acid, on the other hand, may be used against exposure to alkalies that macerate the skin. A simply oily protective contains 70 per cent of petrolatum and 30 per cent of hydrogenated cottonseed oil. This can be used to protect against cutting oils; in many cases protective clothing which is impervious to oil may be indicated in addition. Other greasy preparations are as follows:

		Per cent
1.	White wax	5.0
	Glyceryl monostearate	12.5
	Hydrous wool fat	5.0
	Sodium silicate, commercial solution	5.0
	Ammonium hydroxide, 10% solution	0.5
	Petrolatum	72.5
2.	White wax	10.0
	Hydrous wool fat	5.0
	Sulfonated oil	10.0
	Petrolatum	75.0

In order to produce a rubbery film on the skin, 5 per cent of latex may be added to Formula 1. Formula 2 is recommended when there is prolonged contact with water.

Non-greasy preparations which dry on the skin and do not rub off, are suggested for dry work and dust protection, as follows:

		Per cent
3	Ethyl cellulose	5.0
	Mastic	8.0
	Castor oil	1.0
	Acetone, tech.	86.0
4.	Polyvinyl acetal resin (Monsanto)	5-10
	Castor oil	1.0
	Acetone, tech.	89-94

A thick paste containing finely powdered materials as a barrier is as follows:

		Per cent
5.	Zinc oxide	25.0
	Kaolin	25.0
	Petrolatum	50.0

In all industries where dermatitis is apt to occur among the workers, cleanliness and sanitation must be emphasized. The worker must be taught to do as much as possible for himself to avoid this skin condition. Adequate facilities must be provided for his care. Report of the Committee on Occupational Dermatoses. *J. Am. Med. Assoc.* 122, 370-7 (1943).

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Analysis of Hypochlorite

Both caustic and carbonate alkali can be determined in hypochlorite bleaching baths. First determine active chlorine iodometrically in 25 cc. of sample solution by the method of Penau. To determine free alkali, add a few crystals of barium chlorine and a few drops of a 1 per cent alcoholic phenolphthalein solution to a second 25-cc. sample and then titrate with 0.1 normal acid. Treat a third sample with an excess of hydrogen peroxide which has been neutralized to methyl orange. After a definite interval destroy the excess hydrogen peroxide by heating and determine the total alkali by titration with 0.1 normal acid and methyl orange. The sodium carbonate content is calculated by difference. A. Pakshver. Zavodskaya Lab. 8, 863; through Chem. Abs.

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Water Hardness Meter

Water and a standard soap solution are mixed in definite proportions for use in measuring water hardness automatically. Every five minutes the soap mixture is siphoned into a cylinder and shaken. A light beam is passed through the liquid perpendicular to the surface. If the hardness is too high, no foam will be on the surface to absorb light, and a photoelectric cell operates a relay which records the event. The technical details of water-hardness meters and methods of operation are described in detail. C. Roy-Pochon. *Bull. tech. suisse romande* 68; through Chem. Abs.

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Dopp Kettle Rights Sold

Dopp kettles, used widely in the manufacture of soap, built by Sowers Manufacturing Co., Buffalo, N. Y., will be built in the future by Buffalo Foundry & Machinery Co., Buffalo, N. Y., who have purchased rights for their manufacture. Production of the Dopp line will continue, with the same engineering, manufacturing and sales personnel.

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New Fixed Oil

The seed oil of the arrow wood bush, *V. dentatum* L., is a non-drying oil having the approximate composition of 0.35 per cent of myristic acid, 4.5 palmitic, 1.1 stearic, 3.6 hexadecenoic, 54 oleic and 19 of linoleic acid. The bush grows in the eastern, central and southern areas of the U. S., from the western Great Lakes to the Appalachians and the Ozarks. H. A. Schuette, A. N. Pines, and G. J. Krueger. *Oil & Soap* 20, 158 (1943).

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Hydrogenated Fish Oil

A replacement for cottonseed oil, castor, peanut and other vegetable oils, "GG Hydrol," has just been introduced by Gunning & Gunning, New York. The new material, which consists basically of hydrogenated fish oil glycerides, is expected to find application in the soap, cosmetic and chewing gum industries. Specifications are listed as follows: melting point 55° C., titre 51-53, iodine value 6 per cent maximum, saponification value 190-195, free fatty acids (as oleic) 0.83 per cent maximum. The new replacement is said to be non-toxic and inert, and an excellent emulsifying and plasticizing agent. It is packed in 200-pound drums and is available in carloads or less.

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Effect of Soaps on Skin

DETERMINATION of the pH of healthy skin, the evaporation of moisture, and the swelling of cutaneous tissues served as useful means of studying the effect of liquid and solid soap detergents on human skin. The average pH of the skin as determined with the quinhydrone electrode was 6.4 in nurses, doctors and housemaids whose hands were continually washed with alkaline detergents. The skin cleansers producing no final increase in the pH of the skin included a liquid soap having a pH of 6.5 and a fat content of 27 per cent, and a variety of toilet soap with a pH of 8.5 and fat content of 80 per cent. Those producing a final rise in pH of the skin after an intermediate fall or state of equilibrium were regarded as suitable for all but sensitive skins. They included a liquid soap having a pH of 7.2 and a fat content of 6%, as well as one with a pH of 4.2 and a fat content of 25%.

Those cleansers producing an uninterrupted rise in pH were considered suitable only for occasional cleansing. Of the latter, the most injurious was a pumice soap with a pH of 10 and a fat content of 10 per cent. Factors influencing the normal pH of 3-6 of the skin include the removal or emulsification of the cutaneous lipoids, swelling or shrinking of the cellular tissues and modification of the secretion of perspiration.

Long-continued use of detergents with a high pH may, by raising the pH of the skin, inhibit the antibacterial effect of its normal acid quality and predispose to secondary infection. This predisposition is increased by swelling of the cutaneous tissues, which tends to cause retention of particles and of bacteria, and by the intercellular increase in water content measured by the amount of water evaporated by the skin.

The effect of a number of cleansers on various industrial dermatoses, such as eczema, folliculitis and oil acne, was studied by estimating the pH of the skin, swelling, evaporation, and the clinical progress of the lesion. A liquid soap with a pH of 6.5 and a fat content of 27 per cent proved to be suitable for use in skin disorders, being slightly acid in reaction. Alkaline soaps without admixture of insoluble materials increased the skin injury after long-continued use. The alkaline soaps containing kaolin, pumice, sand, etc., were unsuitable for any of the skin injuries.

The natural buffer - regulating capacity of the skin, dependent on the high buffering capacity of the surface layers of the skin, and the limitation of the diffusibility of acid ions by the relatively higher proportion of fat-protein-colloid compounds in the superficial layer than in the deep layers, is not effective in the presence of external alkaline agents. Increased alkalinity of the skin is followed by swelling of the horn cells, with closing of the follicles and inclusion of foreign particles and bacteria. The latter penetrate to the deeper tissues where the pH is nearer to neutral, which favors optimal growth. O. Schnorr. Arch. Gewerbepath. 10, 409-21; through Chem. Abs.

Sodium Stearate Studies

The seven phases of sodium stearate existing between room temperature and 301° C. have been studied by the X-ray diffraction method. Photographs are given and the results charted in terms of short spacings in angstrom units, as a function of temperature. A. de Bretteville, Jr. and J. W. McBain. *J. Chem. Physics* 11, 426-9 (1943).

Cold Process Soaps

COLD-PROCESS soaps as made in Ceylon may contain 50 per cent or less of coconut oil, although some are made entirely from this oil. Ordinarily a strong lye is used such as 38° Baume, which has a density of 1.358 and contains 32.3 pounds of caustic soda in 100 pounds of solution. To make such a lye, 4 pounds, 14 ounces of caustic soda are dissolved in a gallon of water. In practice it is customary to use 5-6 per cent les lye than required by theory. The reason is that it is practically impossible to get absolutely complete saponification by the cold process. It is better to have a soap with a little unsaponified fat in it than to have free caustic soda. A few formulas follow:

	Lb.
Coconut oil	75
Castor oil	15
Peanut oil	10
Caustic lye 38°Be.	51
Coconut oil	50
Tallow	50
Caustic lye 38°Be.	49
Mee oil	50
Coconut oil	40
Rosin	10
Caustic lye 38°Be.	47½

Tallow and rosin require melting. Rosin should be finely powdered and warmed with the oil until dissolved. After melting, the mixture must be allowed to cool somewhat. The oils should be 90-100° F. The cooled lye is added gradually to the oil in the pan and well stired in. The mixture is stirred until it seems smooth and homogeneous and is firm enough for a mark made on the surface to remain for a short time. Half an hour is usually required for a small batch of 20 pounds.

The mix is poured into frames and allowed to stand for two days. On the third day the sides of the frame are removed. The soap should be allowed to stand for a day before it is cut into bars, which should be allowed to dry further before being stamped. Reginald Child. *Soap, Perfumery & Cosmetics* 16, 457-8 (1943).

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"We now wish to change the pattern of allocation of tall oil, and this letter supersedes our letter of February 2, 1943. There is still no limit on crude tall oil but future deliveries of refined tall oil should be released in the order of essentiality named below:

1. Sulfonated and sulfurized uses and non-detergent soap uses for metal working soap for textile or leather production, and as an oleic acid (red oil) substitute or extender.
2. Driers, oil emulsion for camouflage paint, rubber factice, norepol type extender for synthetic and/or reclaim rubber, rubber processing agent (softening and curing), rust inhibitors, de-inking, and degreasing.
3. Lubricants, waterproofing, polishes, insecticides, disinfectants, petroleum de-emulsification, plastics, and plasticizers.
4. Soaps other than for industrial use and other uses."

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PRODUCTS AND PROCESSES

Soapless Hard-water Cleaner

A soapless mixture of organic washing aids free from sulfonic-acid groups but containing at least one carboxyl group, also contains dialkali phosphates and the usual additions to washing agents. The product is used in hard water. I. G. Farbenind. A.-G. German Patent No. 712,372; through Chem. Abs.

Water Softening Compound

To convert hard water to water having the inherent advantages of soft water for industrial purposes, sodium hydroxynitrilosulfonate is introduced into the water. W. M. Bruner, to Canadian Industries Ltd. Canadian Patent No. 414,880.

Mildewproofing Agent

Development of a non-irritating compound for mildewproofing textiles has been announced recently by Givaudan-Delawanna, Inc., New York. The compound, known as G-4, is a 2, 2'-dihydroxy-5, 5' dichlorodiphenylmethane. It is soluble in certain organic solvents but insoluble in water. The compound has been found acceptable by the Quartermaster Corps as a fungicide for military fabrics. It is used also for mildewproofing various types of textiles for civilian use.

New Water Softener

Hard water can be softened without the formation of a precipitate by treatment with a watersoluble salt derived from a polyglycolic-acid ether. The ether may be formed from this acid and a carbohydrate, a polyhydric alcohol, or a polyhydroxy carboxylic acid. An example is the sodium salt of polyglycolic-acid ethers of sorbitol. Instead of sodium, the ammonium or ethylene diamine or triethanolamine salts may be used. The ether should contain at least 3 carbon atoms per molecule. A detergent composition is formed of such a compound as the above suitable for use with soap in hard water, in a solution of such pH as to avoid precipitation of acid soap. Nathaniel B. Tucker, to The Procter & Gamble Co. U. S. Patent No. 2,311,008.

Soap from Marine-animal Oil

Marine-animal oils are split to produce a fatty acid mixture. The latter is subjected to fractional distillation to produce a special C_{18} fatty-acid composition containing less than 3 per cent of C_{20} and C_{22} fatty acids. The fractional distillation is controlled to produce a composition having a boiling point below 210°C. at 5 mm. absolute pressure. The fatty-acid composition so obtained is saponified to give soap. R. H. Potts, La Grange and J. E. McKee, to Armour & Co. Canadian Patent No. 414,679.

Glass Cleaner

A glass cleaner contains water, a propyl alcohol, and 0.02-2 per cent of tetrasodium pyrophosphate or tetrapotassium pyrophosphate. M. T. Flaxman. Canadian Patent No. 411,832.

Washing Agent

A washing agent is composed of soap and a product which is water-soluble or swells in water, obtained by etherification of wood—digested by alkali hydroxide—with haloacetic acid or its salts. M. Jahrstorfer and W. Kling, to I. G. Farbenind. A.-G. German Patent No. 720,589; through Chem. Abs.

Solid Soap Phases

Four separate crystalline phases of importance exist in sodium soaps. These phases give rise to different properties when present in solid commercial soaps. Various soap manufacturing processes involve phase transformations among these solid forms. The identification and estimation of approximate proportions of solid soap phases rests on X-ray diffraction patterns, by means of which the phase condition of the final product may be ascertained and the processing history followed. R. H. Ferguson, F. B. Rosevear and R. C. Stillman. *Ind. Eng. Chem.* 35, 1005-12 (1943).

Fatty Alcohol Derivative

A new fatty-alcohol derivative consists of a water soluble salt of an ester such as the sulfate or phosphate of blown ricinoleyl alcohol. The blown alcohol has an iodine value of about 40-80, and an acetyl value greater than that of ricinoleyl alcohol itself by an amount between 4 and 35. E. A. Robinson, to National Oil Products Co. Canadian Patent No. 414,601.

Cleaning Agents

Water-soluble salts of aromatic aminosulfonic acids containing at least one aralkyl radical attached to the nitrogen atom are mixed with other washing aids and used as washing and cleaning agents. M. P. Schmidt and J. Voss, to Kalle & Co. A.-G. German Patent No. 721,719; through Chem. Abs.

Soap Filler

A filler for soap and for similar washing agents is obtained in the form of water-soluble products by the condensation of urea with formaldehyde or glyoxal. The condensation is carried out in aqueous solution and in the presence of water-soluble ethers of high polymeric carbohydrates, particularly cellulose ethers. K. Sponsel, to Kalle & Co. A.-G. German Patent No. 712,561; through Chem. Abs.

Oil Refining with Alkali

Vegetable or animal oil is refined with alkali by spraying the alkaline solution as a mist into a mist or spray of the oil. The amount of alkali is only slightly in excess of that which is theoretically required to neutralize the free fatty acids present in the oil. Ralph H. Fash, to Anderson, Clayton & Co. Canadian Patent No. 414,226.

NEW PATENTS

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Complete copies of any patents or trade-mark registration reported below may be obtained by sending 25c for each copy desired to Lancaster, Allwine & Rommel. Any inquiries relating to Patent or Trade-Mark Law will also be freely answered by these attorneys.

No. 2,326,297, Composition of Matter and Method and Steps of Making and Using the Same, patented August 10, 1943 by Mortimer T. Harvey, East Orange, N. J., assignor to The Harvel Corporation, a corporation of New Jersey. A solution of an insecticidal rotenone product in a solid, pulverizable and fusible phenolaldehyde condensation product.

No. 2,326,837, Cleaning Composition and Method for Use, patented August 17, 1943 by Timothy J. Coleman, Buffalo, N. Y., assignor to National Carbon Co., New York. An acidic cleaning composition that is stable in solid form, and adapted in aqueous solution to remove scale, oxide impurities, grease and oil from ferrous and non-ferrous metal surfaces, while inhibiting acid attack upon surfaces of aluminum, brass, copper, tin and lead, which composition comprises a solid alkali metal salt of an inorganic acid adapted in aqueous solution to hydrolyze and yield a free acid; a solid water-soluble salt of a compound selected from the group consisting of the sulfonation products of alkylated phenols and cresols having between nine and sixteen carbon atoms in the alkyl group, the sulfonation products of alkylated benzene having between nine and sixteen carbon atoms in the alkyl group, and the sulfonation and sulfation products of monohydric aliphatic alcohols having between eight and seventeen carbon atoms in the molecule; and a small amount of a solid water-soluble phosphate corrosion inhibitor.

No. 2,326,933, Method of Increasing the Solubility of Halogenated Phenols in Soap Solutions, patented August 17, 1943 by Gunther Endres, Hamburg, Germany; vested in the Alien Property Custodian. The method of increasing the solubility at low temperatures of halogenated phenols in aqueous soap solutions containing an operative quantity of alcohol not exceeding eight per cent, which phenols are normally relatively insoluble at low temperatures, which includes the step of incorporating in the solution trivalent phosphate ion in a proportion between 1 per cent and 4 per cent by weight.

No. 2,327,105, Pest Control, patented August 17, 1943 by Hubert G. Guy, Newark, Del., assignor to E. I. du Pont de Nemours & Co., Wilmington. A self-dispersible composition comprising a substantially anhydrous liquid vehicle containing in clear solution rotenone, tetraethylthiuram monosulfide and an amine salt of a higher alcohol sulfate, the vehicle being constituted principally of plant spray oil and containing brown camphor oil and a water-insoluble liquid alcohol in the amounts required to blend and solubilize the rotenone and the amine salt in the oil.

No. 2,327,302, Soap Composition, patented August 17, 1943 by Harry Robert Dittmar, Wilmington, Del., assignor to E. I. du Pont de Nemours & Co., Wilmington. Hard water having incorporated therein a precipitate-inhibiting amount of an alkali metal salt of a halogen-substituted polyacrylic acid.

No. 2,327,502, Process of Making Soap, patented August 24, 1943 by Benjamin Clayton, Houston, Tex., assignor to Refining, Inc., Reno. The process of purifying soap stock containing excess alkali from the alkali refining of glyceride oils and making soap therefrom, which comprises, adding saponifiable material to the soap stock to react with the excess alkali, heating the resulting mixture to a temperature sufficiently high to break down odoriferous substances contained therein and removing vaporizable materials from the soap stock in vapor form to produce an improved soap from the soap stock.

No. 2,327,701, Paint and Varnish Remover, patented August 24, 1943 by Carleton Ellis, Montclair, N. J., Carleton Ellis, Jr. and Bertram Ellis and Bank of Montclair, executors of said Carleton Ellis, deceased, assignors to Chadeloid Chemical Company, a corporation of West Va. A finish remover composition, substantially devoid of suspended inorganic substances insoluble therein, and adapted for softening old paint and varnish film preparatory to removal thereof, which remover comprises at least one volatile solvent selected from the group consisting of benzene, toluene, acetone, methyl ethyl ketone, methylene chloride, ethylene chloride, carbon tetrachloride, methyl alcohol, ethyl alcohol and ethyl acetate; and a solid substituted paraffin selected from the group consisting of solid nitrated paraffin wax and solid halogenated paraffin wax, solid nitrated scale wax, solid halogenated scale wax, solid nitrated sweater oil, solid halogenated sweater oil, solid nitrated heavy viscous liquid paraffin and solid halogenated heavy viscous liquid paraffins, the proportion of the solid substituted paraffin being not substantially less than 1 per cent and being sufficient to form an evaporation-retarding film on the surface of the composition on exposure to the atmosphere, whereby further evaporation of the volatile solvent is retarded.

No. 2,327,812, Fungicide and Method of Making the Same, patented August 24, 1943 by Sisto E. Marsico, Aspinwall, Pa. A fungicide which comprises a stable mixture of chloroform liniment extract of Cicuta plant and a chloroform liniment extract of copper sulphate.

F. W. D. A. Meets in New York

Members of the Federal Wholesale Druggists met at the Waldorf-Astoria, New York, September 30 and October 1. The three main topics scheduled for discussion were "What Is Ahead for Government and Business?", 'What Is Ahead for Drug Distribution?" and "What Is Ahead for Labor Relations?"

STYRAX OIL

(From Page 35)

[1] *L'Agronomie Coloniale* 15 (1926), 165.—*Perf. Rec.* 18 (1927), 222.
[2] *La Parfumerie Moderne* 18 (1925), 73.
[3] *Zeitschr. f. öff. Chem.* 18 (1912), 267; *Apotheker-Ztg.* 27 (1912), 651.
[4] *Pharm. Zentralh.* 61 (1920), 275.
[5] *Chemist and Druggist* 80 (1912), 412.
[6] *Pharm. Weekblad* 55 (1918), 142.—*Apotheker-Ztg.* 33 (1918), 110.
[7] *Arbeiten aus dem Reichsgesundheitsamte* 57 (1926), 162.
[8] *Die Atherischen Ole*, 3d Ed., Vol. II, p. 786.
[9] *Liebigs Ann.* 31 (1839), 265.
[10] *Ber. d. Deut. Chem. Ges.* 9 (1876), 5.
[11] *Liebigs Ann.* 188 (1877), 184.
[12] *Liebigs Ann.* 164 (1872), 289.
[13] *Pharm. Zentralh.* 37 (1896), 425.
[14] *Pharm. Ztg.* 47 (1902), 779.
[15] *Arch. d. Pharm.* 239 (1901), 506.

EQUIPMENT AND BULLETINS

IF YOU want additional information on any of the items described below or if you want any of the bulletins, catalogs, etc., write to the MacNair-Dorland Co., Inc., 254 West 131st St., New York, mentioning the number of the item.

964—Metal Cleaner Bulletin

A new bulletin, Form No. 11543-1 SUP, describing the uses of four available types of cyclodiene base hydrocarbon solvent degreasers and cleaners for metals, is now available from and will be mailed free to interested parties by Technical Processes Division, Colonial Alloys Co., 2154 E. Somerset St., Philadelphia.

965—Franklin's History Told

The 12-year history of Franklin Research Co., Philadelphia floor wax firm, and the development and uses of its various products are described in a folder "News Underfoot — Franklin's Story," which has just been issued by the company.

966—Antiseptic Velvo Hand Soap

Sanitary Soap Co., Paterson, N. J., announces a newly developed hand soap, called "Antiseptic Velvo," which in addition to its cleansing function is claimed to act as a medium in the prevention of skin infection. Despite the fact that "Antiseptic Velvo" has a claimed coefficient rating of 2, it is said to cleanse gently and efficiently. It is superfatted with lanolin. Literature available.

967—New Filling Machine

A filling machine for dry products, with a special automatic two-way conveyor which returns the filled container to the operator has been developed by Triangle Package Machinery Co., Chicago. The new filling machine has been designed for production setups where it is desirable for the intake of empty, and the delivery of filled, containers to be made at the same point. This permits one operator to handle the entire operation.

The filler is built in a range of sizes capable of handling from 1 oz. to 24 oz. containers. Any one model will handle a maximum of approximately 1½ times the minimum. Production is from 40 to 60 containers per minute. Overall height of the machine is 6'6". The filler is equipped with a no-container no-fill control which automatically prevents discharge when supply of containers is exhausted.

Detroit Rex Changes Name

A new name: Detrex Corp. has just been announced for Detroit Rex Products Co., Detroit, manufacturers of metal cleaning products. The change involves one of the name only; there will be no change in ownership, company policy, management or personnel. Detrex Corp., under its former name of Detroit Rex Products Co., was begun in January 1920 to manufacture degreasers, alkali and petroleum spirits washers and emulsion cleaners, degreasing solvents and alkali cleaning compounds.

Babs Creations, New York, are just introducing a new gift box package carrying 70 guest size cakes of their "Buds of Foam" toilet soap. The box retails at $1.00. With each box goes a handy holder holding three "Buds" soap cakes for convenient wash stand use.

"Good Hand Soap" Defined

IN an article entitled "Hand Power Is Man Power," by Norman F. Allemeier, published in a recent issue of the *War Plant Worker* magazine, methods of combatting industrial dermatitis and ways of achieving a thorough and proper cleansing of the skin were outlined. Following a preamble dealing with the background of the subject of hand care and the function of the skin, the author points out the type of cleaning problem faced by the factory worker: "industrial soil" consists mainly of "various greases, usually mineral, carbon, oxides of various metals and other elements characteristic of certain occupations. . . ."

The author defines a "good soap for the industrial worker" as follows: One which "possesses a maximum of skin cleansing properties, and one which produces a lather composed mainly of small, closely compact bubbles. A soap of such quality is much more surface active against grease and has many times the carrying capacity for carbons and other solid matter" (than "a soap which produces a rapid, profuse lather consisting of large, loosely formed bubbles," which the workmen seem to prefer). These latter soaps, Mr. Allemeier points out, "do a very poor job of emulsifying greases and oils, while those possessing small bubbles have excellent cleansing properties. Such soaps will get into the deeper crevices of the skin and carry away soil which soaps of larger bubbles cannot remove."

The danger arising out of the use of alkali soaps is stated in this fashion: "Many industrial soaps contain high alkali properties. Alkalies, in the presence of water on the skin, produce an excess softening of the stratum corneum (outer layer of skin) thereby closing the crevices like a valve. When the crevices of the skin are thus closed, it is impossible for any cleansing agent to enter and remove the embedded soil. After repeated washings with such soaps, a hard, dry corneum results, rendering the hands insensitive to touch because all of the normal skin oils, which nature has provided, have been removed."

Women, the author states, while having more sensitive skin and more likely to suffer from industrial dermatoses than men, avoid the suffering and inconvenience of skin diseases by taking better care of their hands than men.

The author also decried the amount of waste involved through incorrect use of soap provided by management. He said that 50 per cent more soap was used than was really needed for proper cleaning.

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Fatty Acid Distillation

Fatty acids are distilled in the presence of steam, the heat and steam being sufficient to form a vaporous mixture of steam and fatty acid. The fatty acids and steam are flushed into an expansion zone. The acids are then liquefied without liquefying the steam. The products of condensation pass into a separating chamber and the steam is removed before being liquefied. The fatty acids can also be fractionally distilled in a similar process. R. H. Potts, La Grange and J. E. McKee, to Armour & Co. Canadian Patents No. 414,677 and 414,678. Bottoms may be withdrawn from the fractionating zone to a stripping zone, where steam is introduced to strip vapors from the bottoms. R. H. Potts and La Grange, to Armour & Co. Canadian Patent No. 414,679.

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Fat and Oil Microscopy

Fats and fatty oils can be identified under the microscope by the examination of the crystal formation of the respective fatty acid mixtures derived from the oils. Photomicrographs are given for the fatty acids from beef tallow, lard, cottonseed oil, kapok oil, rice bran oil, palm oil, babassu oil, olive oil, sardine oil, whale oil and coconut oil. Teaseed oil can be identified by the crystals formed on a slide from the fatty acids and caustic potash in butyl alcohol. Corn oil and perilla oil can be identified by the same method. In some cases the microscopic technique can be applied to mixtures of fatty oils, while in other cases the oils lose their identity when mixed. V. C. Mehlenbacher. *Inst. Spokesman* 5, No. 1, 1-4, 6-7; through Chem. Abs.

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Soybean Oil Separation

Soybean oil can be separated into saturated and unsaturated fractions by low-temperature crystallization from acetone. Figures as to yields and the nature of the fractions are given. W. C. Bull and D. H. Wheeler. *Oil & Soap* 20, 137-4 (1943).

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Study Laundering Effects

Cotton, linen and viscose rayon fabrics were laundered with different agents to determine the effects of varying washing conditions. Deposition of calcium and magnesium compounds when the fabrics were washed with hard water and soap, was found to increase rapidly during the first 50 launderings and then to remain practically constant afterwards at 8 per cent of the dry weight of the fabric. Synthetic detergents give a lower rate of loading, but this rate remained the same up to 100 launderings, so that at that time the loading exceeds 10 per cent. With soap the deposit is lime soap, with synthetic detergents it is chalk.

This loading of the fibers takes place not only during the washes but also during the rinses. Soft water is therefore necessary for rinsing as well as for washing. Linen deteriorates more rapidly during laundering than cotton.

Soft water treatment produces a slight improvement in wear resistance. The resistance to repeated bending was also tested. It was found that in general the resistance of cotton and linen was rather improved by laundering without bleach, but the use of bleach had a damaging effect. E. Honegger and A. Schnyder. *J. Textile Institute* 34, T 29-40 (1943).

SOAP QUOTAS RAISED

(*From Page 26*)

authorization to purchase and unless such purchases are removed from these inventory restrictions.

"I am writing this simply to give you the point of view of one of the small soapers. There other matters which might be mentioned but this will let you know some of the reasons why I believe your criticism was made without full knowledge of the facts."

Another letter from a West coast soap plant emphasizes the particular problems that are faced in this area. The situation is outlined as follows:

"It grieved me to read in your recent issue an editorial which bluntly stated that small 'soapers on the whole are not supplying their share of soap products on government bids for the Armed Forces, Lend Lease, and other bureaus, according to opinions expressed in official circles.'

"It seems to me that a serious injustice has been done to small soap companies by the publication of your remarks in 'SOAP.' Certainly, it would have been the part of justice and fairness to have made an effort to question small soap companies as to the extent of their contribution to the war effort before charging them with shirking their responsibilities in supplying soap to armed forces.

"First of all, there is a seriousquestion in my mind as to whether or not government soap purchases, especially lend lease buying, have ben intelligently handled. From our experience I would say not and the net result is that small manufacturers have not been greatly encouarged to participate in bidding. I have good reasons for that statement but I won't attempt to elaborate them here.

"By fighting for government business we have managed to devote between 50 per cent and 60 per cent of our entire production to the armed forces during the past two years. We are still fighting for government business and if you don't believe it please read the attached correspondence received from Washington and our letters relative thereto and then make up your mind as to whether or not the statements in your editorial are on the whole fair and just.

"You know today that you can not interrupt the continuity of your raw material supply and expect to pick it up at some later date without any great difficulty. It does not require a vivid imagination to realize that if you discharge part of your factory employees it will be very unlikely that you will be able to gather them together again in the immediate future. If the armed forces need soap so badly why is it the present policy of the government to wreck the small soap companies West of the Rockies who have heretofore been devoting the major portion of their production to the armed forces."

THE complete text of the OWI news release announcing the new soap program outlined earlier in this article is as follows:

More Soap Provided

The War Food Administration today announced that a program will be inaugurated soon to bring about a 28 per cent increase in soap production for civilian use. The program assures consumers greater soap supplies within a short time.

Additional quantities of fats and oils for this purpose will be made available to soap manufacturers, the WFA said, and the larger soap supply should reach consumers within a few weeks.

Soap production for civilian use has been at reduced levels this year, officials pointed out, but consumers have had no reason to indulge in "scare buying." Stocks in 1942 were the heaviest in history, and some of them were available until the middle of 1943. Absence of some types of soap from retail shelves in recent months has been caused primarily by consumer hoarding on the basis of unfounded rumors WFA said.

The soap supply under the proposed program will provide 25.4 pounds per person compared with 23.4 in 1942, and 25.3 pounds in the pre-war years, 1937-41. Household packaged and bar soaps will be increased from the 17 pounds per person at present to 22 pounds.

While the proposed increase in civilian soap production, on a per capita basis, will provide enough soap to exceed the 1942 supply and equal that of pre-war years, WFA emphasized the fact that there still will be no excess in overall supplies and urged conservation by every possible method. Military demands, which are in addition to the civilian allocation, are increasing in proportion to increases in personnel and, too, large supplies soon will be needed to effect a large synthetic rubber program. Officials reiterated an appeal that consumers buy supplies only as needed and gave assurance that if this is done, production will be entirely adequate to meet all needs.

The increases in soap output will be made possible by improved shipping conditions which permit the importing of more fats and oils; by increased production of domestic animal fats and vegetable oils; and by the more general use of rosin and other domestic soap materials as substitutes for fats.

The new soap program was discussed in detail at a recent meeting of WFA's Soap and Glycerine Industry Advisory Committee and members of that group, representing every phase of the industry, said they could foresee no difficulty in getting increased production under way by October 1. It will require about 30 days additional, however, to place the new production in consumer trade channels.

The program contemplates an increase in the allowable use of fats and oils in soapmaking from a flat 80 per cent of 1940-41 use to 90 per cent for household packaged soaps and all types of bar soap; 110 per cent for industrial soap—for laundries, restaurants, etc.; and 150 per cent for abrasive hand pastes and powders, commonly called mechanics' soap.

It is considered necessary from a standpoint of health to classify the types of users so that each group will get its supply in accordance with actual needs.

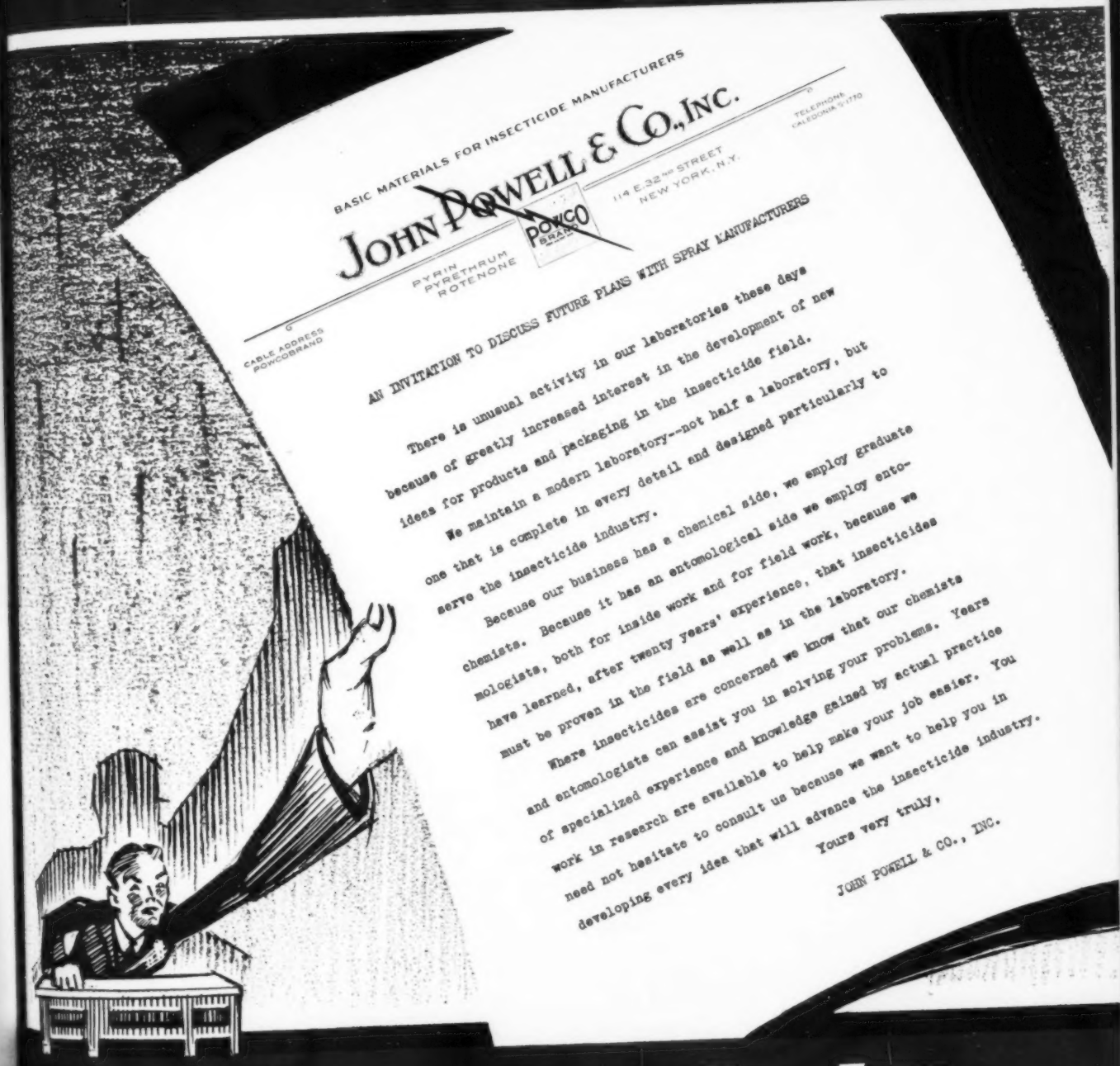
Public institutions and public and private hospitals will be added to the "ex-quota" list, permitting manufacturers to supply them soap without limitation, up to designated inventory restrictions. Factories also will be permitted to buy their washroom supplies without limitation as a health protection measure.

Allocation of fats and oils for the making of civilian soap supplies began last October, when only 88 per cent of the quantities used in 1940-41 was allowed. Allocation became necessary when heavy demands for all fats and oils and curtailed imports resulted in rapidly dwindling stocks. As the

(*Turn to Page 123*)

SANITARY PRODUCTS SECTION

Insecticides • Disinfectants • Moth Products
Floor Products • Polishes • Chemical Specialties



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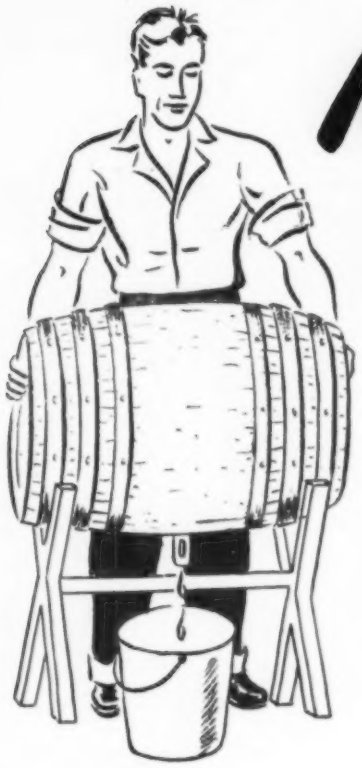

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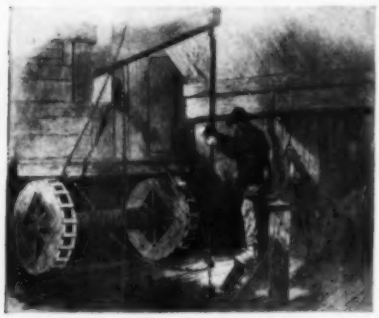
INSIDE NEWS

OCTOBER PREPARED BY NATIONAL CAN CORPORATION, NEW YORK, N. Y. 1943

Facts About U. S. Oil Reserves Indicate Inevitable Rise In The Price of Crude

Whatever happens in Congress this month, a *rise in the price of crude seems inevitable in the long run.*

Supporters of the recommended 25c to 35c per barrel price rise—including Petroleum Administrator Harold Ickes—point to expense of wartime wildcatting, approximately $47,000 per well, current costs of



Boring for oil in the Pennsylvania "Oil Creek" region in 1864 required little more than a rope, a drill and a gambling spirit.

400,000-well operations in the teeth of manpower and material shortages, and extra investment required to make stripper wells profitable.

War or no war, however, costs are bound to rise as the supply dwindles. Estimated known reserves of 20 billion barrels are said to be good for 16 years, but the key fact is this: *rate of flow slows down in older wells, becomes increasingly difficult to maintain.*

Advancing discovery and extractive techniques together with hydrogenation processes will change the picture, but are not expected to modify higher costs—at least, not from the point of view of safe, long-range planning.

Hopeful names in oil news today include the Calgary wildcats now under way . . . Athabascar tar sands, also Canadian, with an enormous potential for gasolene, kerosene and fuel oil, but no lubricants . . . and California, where 64% more wildcat wells were drilled in first 5 months of '43 than in the same period of last year.

Oil men point to coal and oil shale as a long but last-ditch defense against dependence on imports. *Oil industry as a whole looks to petroleum chemistry as most promising source of new business, post-war.*

Post-War Oil Notes. High octane gas, plastics, pharmaceuticals, glycerine . . . many new elastomers . . . are old stories now, but note a new war-secret synthetic, effective for its purpose when diluted to one part in 100,000,000 . . . a new "anti-oxidant" so powerful that a handful of crystals in a freshly painted room prevents drying of paint indefinitely . . . a watch oil retailing at $700 a gallon in a container holding less than 1/6th of an ounce. Background reading: BUSINESS WEEK, "Revolution in Oil," special report . . . "Fightin' Oil" by Harold Ickes, a friendly but shrewd analysis by the Petroleum Administrator for War . . . and statistics from American Petroleum Institute, 50 West 50th Street, New York City.

Modern "wildcat" drilling, using fast, powerful machinery, now costs $47,000 per speculative well, is required by the war program. (442)

Painting with Light

Walls of post-war homes may be decorated with paint designs that are invisible under ordinary lights, but glow under ultra-violet illumination. Different color schemes will be produced by flicks of a fluorescent light switch. (443)

Dustless Homes

Dustless homes are promised by new industrial dust catchers that impart a positive charge to particles of dust traveling in air over five tungsten wires, charged with 12,000 volts. Parallel steel plates charged with negative electricity snatch and hold these particles. Present uses are in the manufacture of blood plasma, powdered milk, where a building of pure air is essential. (444)

Dehydration Needs

In May of last year, some 20 plants were dehydrating vegetables at the rate of 15,000,000 pounds a year and by now 188 plants are scheduled to be operating at the rate of 200,000,000 pounds a year. But since double that amount is the goal, 200 additional plants are needed. Pre-war production of dried eggs was 3,000,000 pounds and the 1943 needs will be 480,000,000 pounds. (445)

N. E. Castor Beans

New England states are now growing castor beans and may soon compete successfully on a postwar basis with tropical regions from which our castor oil has previously come. Experiments with colchine are transforming low-yielding New England castor plants to a plant yielding more and larger pods. A southwestern university, working with colchine, has developed a new strain of soybean almost twice the size of the original. (446)

Coal Potentialities

Coal, one of Nature's most common raw materials, is potentially richer in rubbers than all the islands of the East; more bountiful in fibers than all the Japanese silkworms; wealthier in colors than the rainbow; and abounding in curative medicinals. (447)

Coating Compositions

Styryl phenols, reacted with a gas, form resins that are compatible with drying oils, and useful in coating compositions, according to a recent United States patent. (448)

Cork Substitute

A newly developed cork substitute made from soap, cement, glue and water is announced out of Capetown, South Africa. Since cork is on the restricted list, shipping difficulties have made technicians look for substitutes. The result of this South African alternate for cork is said to float in water, has heat insulating qualities of cork, and has a definite construction strength. (449)

New Purity Measurement

A new testing instrument has been devised to measure purity of distilled water. Results are expressed in parts per million of sodium chloride. (450)

Fermentation Speed-Up

The initial fermentation rate for maltose and galactose with yeast may be speeded if the fermentation takes place in the presence of an atmosphere containing more oxygen than air, and preferably in a pure oxygen atmosphere. Oxygen may be bubbled through the solution to provide additional contact. (451)

Leather Substitute

England is experimenting to combine a cellulose product with cotton waste, to serve as leather substitute in footwear production. (452)

Titanium a Common Element

As late as 1910, there was no important commercial use of titanium. The public was unaware of its existence, although countless Atlantic seaside bathers noticed the black specks in white sea sand. Chemistry books contained little information about it. Titanium was then a rare curiosity, but is now recognized as the ninth commonest element in the earth's crust. There is three times as much titanium in the world as carbon. Long after mankind has ceased to use coal as fuel, titanium oxide will still probably be used as a white paint pigment. (453)

Roach Control Through Crayons

Sodium fluoride crayons have been found convenient, safe, effective and economical in control of roaches. If the marks made with the crayons are not disturbed, they function for an indefinite period of time and offer protection against reinfestation. The added advantage of lessened danger of food or contamination over which roaches may run after contact with the poison is a further advantage. (454)

Bleached Handles

Handles of picks, shovels, pitchforks and other tools have that blonde appearance because they are bleached with hydrogen peroxide. (455)

Safety Glass for Coating

The plastic interlayer in automobile safety glass is now the coating for Army raincoats, hospital sheeting and drinking water bags. (456)

Technical Topics

DISINFECTANTS—Products of higher efficiency, less disagreeable odor, wider range of usefulness, less danger to the user etc. are forecast for the post-war period. New specifications of the Army (No. 3018C) and U. S. Bureau of Ships (51D6) indicate the present trend, which in many cases represent a distinct advance from pre-war disinfectants and germicides, customarily based on cresol or cresylic acid. (457)

QUININE ALTERNATE—Atabrine is being offered by a third producer in endeavor to bring production high enough to dispel some public and government worry about this important substitute. While quinine is a malaria prophylactic as well as remedy, atabrine has only remedial qualities, it is understood. (458)

SOAP AT WAR—The corrosive action of sea air makes it necessary to give extraordinary protection to metal war equipment now going overseas in huge quantities. A trace of water, even left by a fingerprint, is sufficient to etch a bearing or cylinder wall so that the machine may fail at a vital moment. As a solution, the metal parts are thoroughly cleaned with organic solvents, then with soap, quickly dried and wrapped in cellophane, pliofilm or similar substances. Intruding traces of water are rapidly absorbed by moisture-absorbing chemicals, placed inside the wrappings, which must be airtight. (459)

MEAT PRESERVATION—Treating meat within four hours after slaughter with hypertonic saline solution for 24 hours, followed by packing in hermetically-sealed container with 20% table oil and heat-treating at 75°C. for three successive days, is a recently-patented preservation process. (460)

RED SPIDER CONTROL—Lima beans for canning or freezing are so affected in some areas. Control measures must begin when plants are small, sulphur sprays and dusts being found best controls. Recommended formulas are available. (461)

PROTEIN AND VITAMIN RESEARCH—A new sodium sulphite process has uncovered almost pure protein with great potentialities. (462)

MARINE CONCENTRATES—Frozen clam broth with its ice separated produces a highly desirable concentrate containing 12% total solids which may be raised to 21%, from an initial 5%, by second processing. Believed applicable to other marine products. (463)

POULTRY PALATABILITY—Quick freezing of New York dressed poultry which was held six months before eviscerating provided superior palatability to birds eviscerated 18 hours after dressing, then multiple-plate frozen and held in storage for the same length of time. Economy for eviscerators. (464)

APPLES AND CITRUS TO WAR—United States pectin, accounting for half the world's supply, has a wartime shortage since its use as a blood plasma substitute in treating shock. Other war uses also vital. (465)

SOYBEAN LECITHIN—Suggested as lubricating oils inhibitor in place of synthetics containing critical materials. (466)

VITAMIN E—Effectiveness of Vitamin A has been doubled by addition of Vitamin E, a West coast pharmaceutical manufacturer claims. Its effects are noted on Vitamin A and D tablets, it is understood. (467)

SKIN VARNISH—Sterility in the operative field is the claim for a new skin varnish, formula for which is available. (468)

SULPHONATION SIMPLIFIED—Sulphonation of aliphatic compounds, such as oils, fats, and fatty acids, is claimed to be simplified by the process described in a recent patent. Easy control of reaction temperature is a further claim. (469)

HEXITOL ANHYDRIDE FATTY ACID ESTERS have been introduced for use as emulsifiers, detergents, and wetting agents by an American chemical company. Since they are non-electrolytes, are neither sulphates or sulphonated products, and are virtually free of soap and inorganic salts, they are stated to make possible a whole range of new applications. Solubilities range from completely water soluble to completely oil soluble. (470)

Every effort will be made to furnish additional information on these articles. Where such information is not obtainable, we will refer inquiries to the original source of the article. Write to National Can Corporation, 110 East 42nd Street, New York City. Please mention the number at end of article—also name of the magazine you saw it in.

SANITATION
Has A Special Meaning in Hospitals

DID you ever watch a surgeon wash up in preparation for an operation? He uses a stiff bristled brush and plenty of surgical soap, and he rubs and scrubs from finger-tip to elbow until his skin is nearly raw. Not a one-minute casual cleansing, but ten minutes' vigorous work until his skin is as pink as a rose!

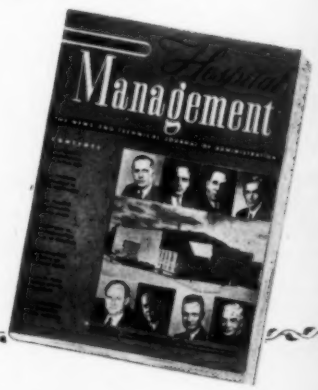
There is an equal difference in hospital sanitation and the common practices followed in other institutions. Ordinary cleanliness won't do in hospitals. They too have to be "surgically clean"—implying a scientific removal or neutralization of any element injurious to health.

That is why, with 1,125,000 persons receiving treatment daily, and with a service personnel exceeding 1,235,000, the hospitals of America constitute one of the largest markets for cleansers and sanitary chemicals.

Slighting the hospital market would be like overlooking a city of 2,360,000 population—and a city much "fussier" than other cities about the matter of cleanliness, a city in which cleanliness is the first rule, a veritable fetish.

In an ordinary city of this size, sales would be much more difficult too, for you would have to sell a vastly larger number of smaller buyers than you do when dealing with buyers whose average "family" consists of 371 people.

The easiest, most effective and least expensive method of bringing your product and its advantages to the attention of these buyers is through consistent advertising in HOSPITAL MANAGEMENT, the fastest growing publication in the hospital field. Its 30% gain in advertising volume for the first six months of 1943 means that a constantly growing number of manufacturers is finding this statement to be true. Why not ask us for details today?



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The only Hospital publication which is a member of both the ABC and ABP.

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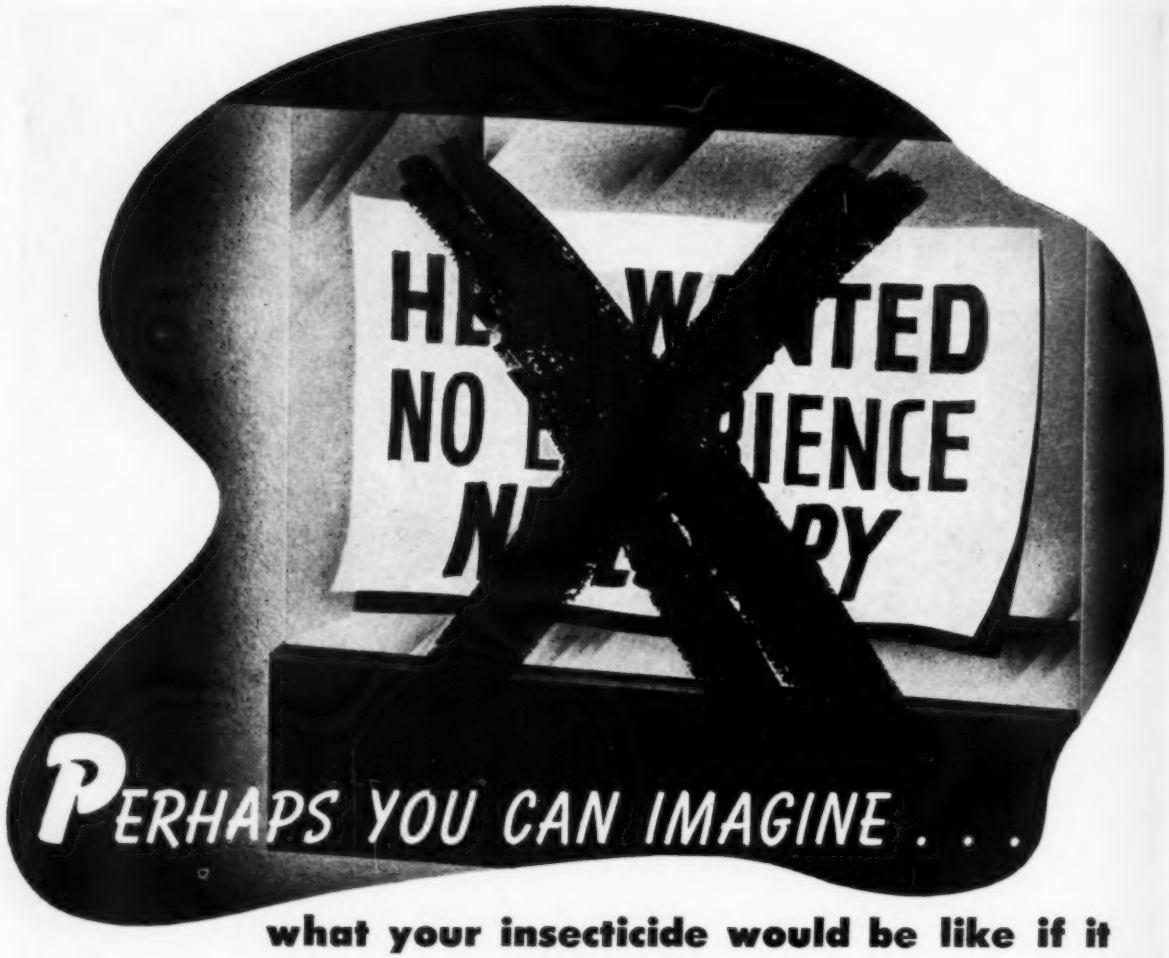

what your insecticide would be like if it were perfumed by a "no experience necessary" person. van Ameringen-Haebler chemists must — and do — have "years of experience". Their knowledge and skill will produce an insecticide pleasant to use and without an excess of perfume.

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More than 50 replacements for currently high priced, wholly unavailable or hard-to-get Essential Oils and Related Products are now obtainable under the M M & R label, seal and guarantee.

These are not spur of the moment *"war babies"* but thoroughly tested and approved products that are being used extensively now with genuine satisfaction. All are priced well below the products they are intended to replace, yet many have proved themselves superior, in numerous instances, to the commonly used oils.

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PYRETHRUM is doing a good job in combat areas overseas. Insects there are bigger—and busier, so pyrethrum was called upon to march in.

Reports from the front read like a military communique, as the campaign against the insect army goes on.

We are hopeful that in a coming season increased production will have caught up with increased demand. At the earliest moment, we shall be pleased to serve you with improved pyrethrum products.

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Buy War Bonds and Stamps — for Victory

THE WORLD'S LARGEST BOTANICAL DRUG HOUSE

. . . *Official Test Insecticide* (O.T.I.)

SUPPLIES of the 1943 Official Test Insecticide for evaluating fly sprays by the Official Peet-Grady Method are available only from the office of this Association. The O.T.I. is priced at $5.00 per dozen six-ounce bottles, plus shipping costs, to members of this Association. To others, there is an additional service charge of $1.00 per dozen. Single bottles are $1.00 each. Check with order is required.

The 1943 Official Test Insecticide is required for all official testing of fly sprays by the Peet-Grady Method for the period from June 1, 1943 through May 31, 1944.

National Association of Insecticide & Disinfectant Manufacturers, Inc.

110 East 42nd Street — New York

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These concentrates have been widely accepted by discriminating manufacturers. HI-TOX 20 is available for your liquid insecticides and MORTICIDE for your bed bug liquids. Why not investigate fully now and place your order early for prompt shipment?

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BUT DON'T ASSUME TOO MUCH!

Recent events are leading everyone to visualize the end of the war, though with varying degrees of optimism. It probably isn't coming as soon as a lot of people have been hoping—but even when it does come it would be a mistake to assume it will be the end of the supply difficulty on pyrethrum and rotenone.

Military requirements for pyrethrum will continue heavy as long as we have troops in tropical areas, and post-war rehabilitation and disease control will require perhaps even larger amounts than are now being used. Any possible surplus during the next nine months will be badly needed by agriculture.

Rotenone supplies for 1944 are reasonably adequate, though far from ample. At best we shall have rotenone insecticides for most of the important food crops for which they are either essential or desirable, but there will be no surplus for less essential needs.

Manufacturers of household insecticides must plan on another season of getting along as best they can with substitutes.

DODGE & OLCOTT COMPANY
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L. R. (JOE) PITTO, one of Anchor Hocking's ablest and most popular men, has been a member of the Anchor Hocking family for 14 years.

ANCHOR HOCKING

GLASS & CAPS

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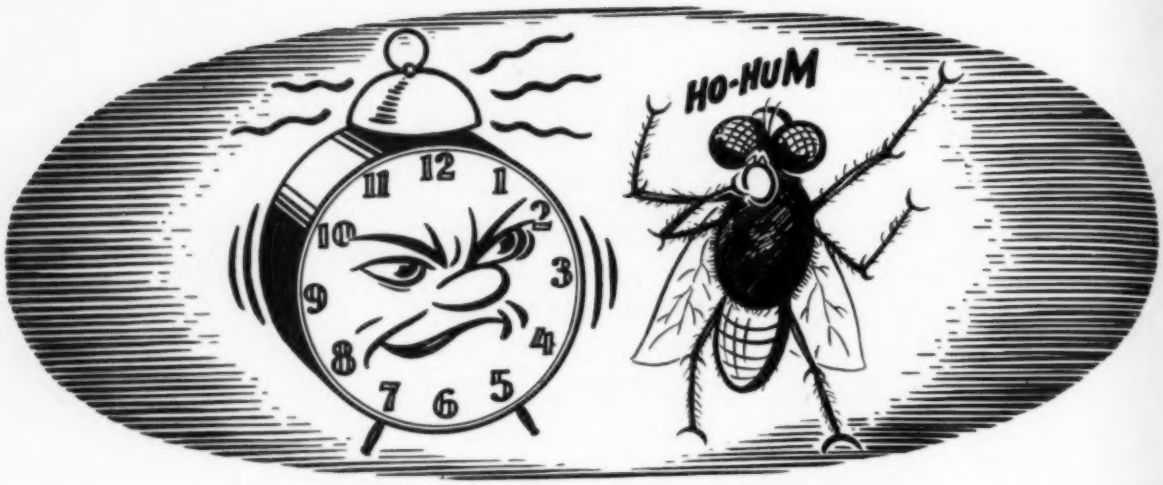

TIME—*Flies*

IT WILL SOON BE 1944

Due to transportation problems, irregular distribution of kerosene, bottles and closures, shortages in certain perfume raw materials, fly spray manufacturers are right now placing their orders for *1944 FLY SPRAY PERFUME* requirements.

ORBIS offers a complete line of *FLY SPRAY PERFUMES* and *LETHANE* and *THANITE DEODORIZERS* and are now entering contracts and making arrangements for 1944 requirements.

We will be pleased to supply samples and practical advice based upon your requirements.

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Putting a patch in a smoke screen

HIDDEN by a dense smoke screen, American troops creep up on an enemy position.

Suddenly a gust of wind blows a hole in the smoke, exposing the men to the enemy. Instantly one soldier grabs for his belt . . . slips off a little can . . . heaves it at the opening!

As the can hits the ground, it belches smoke—thick enough to patch up the hole. The men move forward, once again concealed.

The Army calls this can a smoke grenade. But it doesn't contain smoke! It's filled with chemicals that make smoke when a mechanism is released. And it has an ingenious device that delays the action so the chemicals won't burn the thrower's hand.

These secret chemicals must be protected against dampness, dirt, mud—the rough-and-tumble handling of war. They've got to get there—*safe*. They do . . . in cans. Cans are rugged!

America's favorite container—the can that's still bringing you many essentials—will finish its war job some day and be back, better than ever. We're learning plenty as "Packaging Headquarters for America" at war.

NOTE TO WAR MANUFACTURERS

Rushed as we are, we can still take on more war work. A part of our vast metal-working facilities for forming, stamping, machining and assembly is still available. Write or phone our War Products Council, 100 E. 42nd St., N. Y. C.

It gets there-safe-in cans

CONTINENTAL CAN COMPANY

HELP CAN THE AXIS
—BUY WAR BONDS

Boudoir or Beach!

. . . you'll see fine products packaged in gleaming, graceful Maryland Glass. Yet, attractive as are the Maryland Glass designs created in pre-war days, they will be followed by even finer "designs for selling" after Victory has been won. In planning your attack on the post-war market, consider the many sales advantages of eye-catching Maryland glass bottles and jars.

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MARYLAND

Bottles and Jars

Cleanliness always has an AAA-1 priority rating in the canning plant

Today's modern canning and food packing plant is operated on the highest degree of cleanliness. Naturally, the canner buys large quantities of sanitary products. Insecticides too—are equally important.

Are you aggressively selling this important market? The advertising pages of THE CANNER offer you the opportunity to sell this industry NOW—and after the war—by giving you complete coverage of all the important food packers. It is the only paid circulation publication covering this field (with a renewal percentage of 89%)—assuring you high reader interest—and a profitable return on your investment.

A copy of "What's Cookin?—in the Canning Industry" giving all of the detailed information is waiting for you. Just drop a note to

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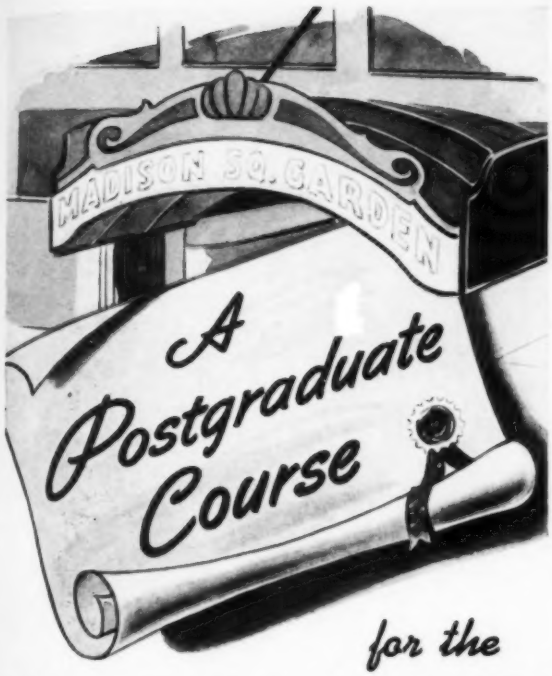
an indispensable journal for all food packers

140 N. Dearborn St. **CHICAGO 2, ILL.**



for the

DETERGENTS INDUSTRY

UNDER one roof, in Madison Square Garden, New York, this year's Exposition of Chemical Industries will present a remarkable educational opportunity. There, during the week of December 6-11, 1943, members of the soap and sanitary chemicals industry will find the equivalent of a post-graduate course in chemistry and engineering applicable to their own problems.

Available here will be a wealth of ideas useful in these days of substitutions for materials now hard to obtain and the resulting necessity for changes in processing. With the coming post-war period, the soap and sanitary chemicals industries will face important changes—many foreshadowed by exhibits at this Exposition.

Plan to use to the utmost this arsenal of workable ideas. You will find more "show-how," more factual data, because this year's Exposition is more concentrated than ever before. It will be an information center, manned by technical representatives of the country's leading producers of raw materials, and builders of processing equipment.

Admission to the Exposition of Chemical Industries is by invitation and registration. As the general public is not admitted, you will find here every facility for a thorough-going study of the chemical and engineering developments of prime interest to you. By all means come—and bring your associates.

19th EXPOSITION OF CHEMICAL INDUSTRIES

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DEC. 6-11, 1943

Managed by International Exposition Co.

FOR years we have been privileged to represent TOMBAREL FRERES, one of the world's outstanding producers of Essential Oils, Resinoids and allied materials . . . and to work in close collaboration with them.

• Today, we are further privileged to carry on their century-old traditions and to produce perfumery materials of TOMBAREL high standards of excellence.

• To Manufacturers of Soaps, Deodorants, Fly Sprays, Disinfectants and other Sanitary Chemicals, our laboratories are rendering invaluable service in supplying

Special PERFUME CREATIONS *for every occasion*

Also BASIC PERFUME MATERIALS
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For help with *your* particular problem, write

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SANITARY PRODUCTS

Official Publication, Nat'l. Assn. of Insecticide & Disinfectant Manufacturers

ABOUT a year ago, the use of metal cans by manufacturers of small package insecticides, disinfectants, and allied sanitary chemical products was stopped by W.P.B. Those companies which had not been using bottles, plus those who had been using some, turned en masse to the glass package. As a consequence, products brought to market for the 1943 season, especially household insect sprays, have been almost wholly glass packed. Not only has the whole package demand of this field been thrown on glass, but the rate of production and sale of almost all types of products has in addition shown a marked increase this year. The total effect on the demand for glass bottles has been only too well known in the industry.

Now, as we look forward to 1944, there is a distinct threat that the supply of bottles may not be able to meet the tremendously expanded demand. On top of this, shipping cases and other paper products are finding an ever-tightening supply situation as pulp production declines. Some manufacturers fear that we are facing a bottle situation akin to the can situation of a year ago. However, we do not feel that the problem is anything like as serious as that. A committee of the National Association of Insecticide & Disinfectant Manufacturers and the W.P.B. have been working on this matter for some time in cooperation with the glass package industry. As a result of their combined efforts, we do not believe that anybody will be left high and dry for bottles to take care of most of 1944 needs.

HEAVY turn-over in employes in the consuming industries, necessitating almost constant instruction of new men in the use of various insecticides and other sanitary supplies, bedevils the daily life of manufacturers of these products. For years, the custom has been for service men of the sanitary supply industry to instruct and demonstrate to employes of factories, canneries, flour mills, hospitals and the like, the proper method of use of their various specialties. The reason is obvious. Used properly, the materials do the job and give satisfaction. Improperly used, the reverse may be true and the business lost.

Today, it seems that no sooner is one employe taught the correct use of sanitary materials, than he quits his job and a new man takes his place. This means two, three or more times as many calls by service men of the supply houses. This entails far more car mileage, gas use, and longer hours for service men who are already taxed to the limit. But if the work is not kept up, it means a serious menace to important units of our food supply, particularly in the use of materials for proper insect control. A breakdown in this service would inevitably bring food losses which we can ill-afford.

Although the sanitary supply industry continues to grow more fearful of a breakdown in its service, we feel that the War Food Administration, undoubtedly cognizant of this situation, will do everything possible to aid in avoiding any such threat to plants processing, packaging and storing foodstuffs.

CLOTHES MOTHS and Their Practical Control

By Dr. M. H. Doner
and Dr. E. G. Thomssen

The J. R. Watkins Company

ALONG with carpet beetles, clothes moths are the bane of the housewife, and justifiably so, for these pests are responsible for nearly 99 percent of the insect damage to fabrics used for clothing and house furnishings. The annual damage in the U. S. runs above 200 million dollars. In common with many of our insect foes, clothes moths have been known in Europe, Asia, Africa and other countries since time immemorial and were introduced into America presumably during the early colonial period.

Food Habits and Species

MATERIALS made from animal fibers, wool, hair, fur and feathers form the favored articles of diet of clothes moth larvae. Supplies used in national defense comprising uniforms, blankets, wool and fur-lined helmets, boots and gloves, sheepskin-lined harnesses and saddles, fiber brushes, wool pile carpeting are all subject to injury by clothes moths. It is note-worthy that the horny or keratin substance of wool, indigestible to mammals and birds, is relished by the larvae of clothes moths. Piano felts are often badly damaged. Although cotton, linen or silk fabrics are not normally eaten, clothes moths will eat through these fabrics to reach wool. Other sources of food include hair (from dogs and cats that may accumulate in floor cracks), stuffed animals and hair felt for sound proofing, plastering and insulation.

In popular usage the term "moth" refers also to the carpet beetles or buffalo moths which also feed, in part, on fabrics. The larvae are brown worms with a tuft of hair at the end of the abdomen. As they do not spin webs on their food, there should be no difficulty in confusing them with larvae of the true clothes moths.

In size and general appearance clothes moths often resemble certain other species of minute moths or "millers" that are attracted to and fly about lights in dwellings on summer evenings. These insects develop from larvae or caterpillars that feed on plant life and are harmless invaders of the home. True clothes moths usually shun light and, if disturbed, either fly or drop and crawl to places of concealment. When noticed they are usually flying in darkened parts of the room, out of the glare of the light.

The adult and larvae of moths that injure fabrics can be distinguished with the following keys:

Adults

1. Wings, when spread apart at right angles to body, measuring about ½ inch from tip to tip.
   a. Forewings grayish yellow or buff with 3 indistinct dark spots on middle of outer portions ..... *Casemaking Clothes Moth* (*Tinea pellionella*).
   b. Forewings pale buff *without* spots ..... *Webbing Clothes Moth* (*Tineola bisselliella*).
2. Wing expanse ¾ inch; basal thread of forewings black, outer 2/3 creamy white. . *Carpet Moth* or *Tapestry Clothes Moth* (*Trichophaga tapetzella*).

Larvae or "Worms"

1. Larvae in portable cases. . *Casemaking Clothes Moth.*
2. Larvae not living in cases, although they may occur in tunnels on the fabric.
   a. Spin cobweb-like, transparent coverings on fabrics. . . . *Webbing Clothes Moth.*
   b. Build tunnels or burrow in all directions on the fabric. *Carpet Moth* (*Tapestry Clothes Moth*).

Habits and Life Cycle

ADULT clothes moths do not feed, their sole excuse for living being to perpetuate the species. Fecundation occurs shortly after emergence from the pupa or "cocoon" whence the gravid females seek out and deposit their eggs singly or in groups (from 100 to 300) on preferred food substances. If the fabric is inaccesible to the female the eggs are deposited in cracks or crevices of the fabric container and the minute larvae readily find their way to the food.

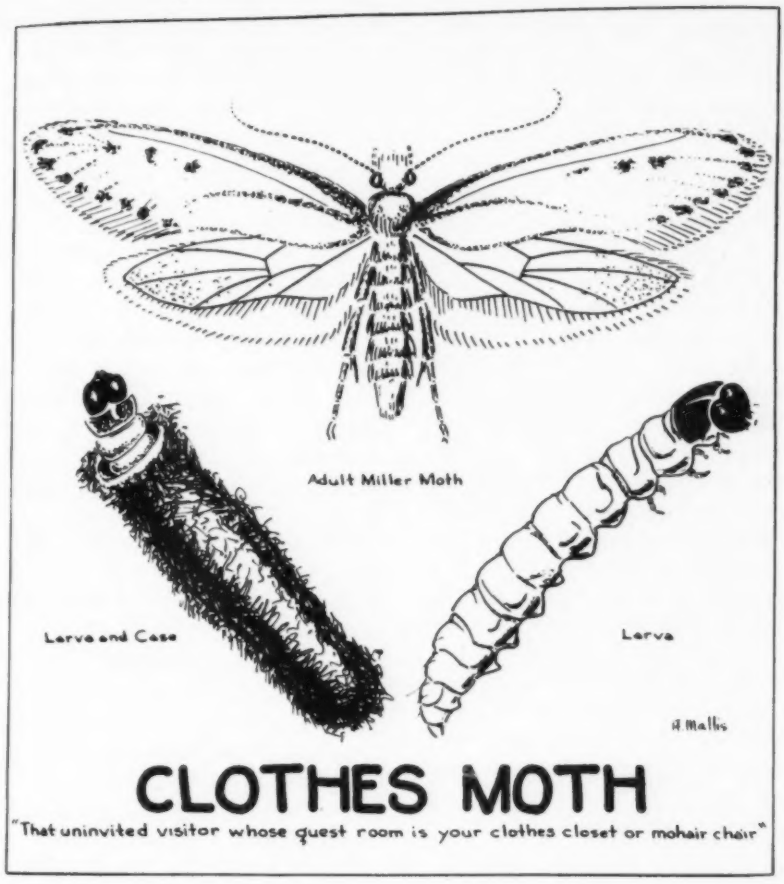
Colman placed uninfested wool in the concavity of a "hanging drop" slide over which was superimposed a similar slide, separated from the first by bits of brass leaves so as to leave crevices ranging in width from two-thousandths to ten-thousandths of an inch. Exposed to moths, those slides with crevices of four-thousandths of an inch or larger become infested with

clothes moth larvae, whereas those with small crevices remained uninfested.

The duration of the egg stage varies from 4 to 8 days at summer temperatures to 3 to 4 weeks in colder temperatures. The popular notions that eggs laid in the fall or winter months do not hatch until spring, and that clothes moths do not fly until all their eggs are laid, are false.

The tiny, active larvae that hatch from the eggs have a tremendous propensity for food but their rate of growth depends upon factors such as the nutritive value of the food consumed, temperature and moisture conditions. Thus the period of growth may extend from the lower limit of 50 days to 3 years. It is known that not all larvae hatching from eggs deposited at one time mature equally. Certain individuals cease feeding for a time while their fellows continue to feed. This results in an overlapping of generations, so that all stages of the insect may exist at one time. The statement that a "clothes moth larvae consumes 2000 times its own weight in food during its life" is of interest when compared to the human being. Assuming that a hundred pound man eats 8 pounds a day for 70 years or a total of 204,400 pounds of food, the clothes moth eats as much, in 50 days, in proportion to body weight, as a man would consume in seven years. It is fortunate, as pointed out by Back, that 90 to 99 percent of the larvae that feed on clothing fail to mature.

Mature larvae, which measure about three-eighths of an inch in length, spin silken cocoons about themselves. Cocoons may be found almost any place in infested areas, not necessarily on the fabrics where the larvae have been feeding. Within the cocoon the larva transforms to the pupal or resting stage and the winged moth emerges sometime later ready to mate and start another generation. Griswold (1938) observed that while the life cycle of the male is somewhat shorter than that of the female, adult males live almost twice as long as adult females. She also observed (1936) that "the winged moths live longer under humid than under dry conditions."



There are at least two generations of clothes moths a year. Adults may be seen almost any time of the year in heated buildings but are most numerous during the summer months. The larvae do commit sins of depredation in the winter months in heated places but the common notion that the adults do little or no breeding during that time is apparently not true according to experiments of Griswold who found that clothes moths "will mate and lay eggs during any month of the year."

Preventive Control

BECAUSE of the varied food habits of the larvae and the scheduled habits of the winged moth, control measures must be exerted on a number of fronts. A perennial problem of the economic entomologist is educating the layman to put into practice simple measures that are designed to prevent insect attack. In the majority of cases the householder appreciates the importance of control only after the damage has been done. Also if preventive measures are employed and damage still occurs, due not alone to failure to do the job correctly, but to the use of chemical substances that have little or no recognized value in moth control or prevention such as gum camphor, cayenne pepper, allspice, cedar chips or shavings, salt and other materials thought to be obnoxious to insects, the problem is accentuated. The assertion that a 100 percent moth-free home is an exception to the rule only indicates the importance of doing those things that are of value in preventing moths from establishing an infestation.

There is much to be gained by the simple expedient of frequent brushing, beating, sunning and dry cleaning or washing in strong soap solution, clothes subject to moth injury or which are believed to be infested. Such handling either removes the

eggs and larvae or destroys them. Since the larvae can thrive on accumulated lint in crevices and cracks, on feathers and animal hairs, the importance of removing such breeding places is obvious. Fly sprays with an odorless hydrocarbon base, and at least a grade B rating are of value in moth control from the preventive standpoint. Likewise the so-called "moth" sprays are effective. Routine spraying in clothes closets, on overstuffed furniture and in rooms (as for flies) will kill whatever stage of clothes moth may exist which are contacted by the spray. Many of these products exert a temporary repelling affect on the moths by preventing oviposition. Unfortunately, in spite of the merits of liquid sprays for the purposes just mentioned, it is to be doubted if many users actually derive much benefit from the standard liquid sprays, chiefly because of faulty methods of application and the erroneous notion that their value is limited chiefly to fly control. The same product sold as a "Moth Spray" often overcomes this situation.

For the last twenty years considerable attention has been given to the development of chemicals that will give extended protection to clothings, furs, rugs, upholstered furniture, furniture covers, drapes and the like. These are the so-called "moth proofing" agents, probably more correctly referred to as "fabric pest deterrents" yet notwithstanding the 1000 or more patents that have been issued, only a few products have been marketed.

There are two classes of mothproofing preparations. The first includes aqueous solutions of sodium arsenate, sodium arsenite, sodium fluoride, sodium fluosilicate, magnesium fluosilicate and the corresponding potassium salts. Occasionally other chemicals such as alum or sodium sulfate are present. Billings makes the following interesting comments: "The toxic ingredient is usually present in amounts ranging from one-fourth of 1 percent in the solution when prepared for use. . . . . When woolens are thoroughly impregnated with proper solutions of these fluorine and arsenical compounds, the mothproofing value is unquestioned. Washing in soap and lukewarm water usually reduces or destroys their efficiency, but dry cleaning in the usual solvents, ironing, and long exposure to sunlight do not appear to have any appreciable adverse effect on the mothproofers of this type. It should be borne in mind that these substances are poisonous and their use in clothing has been condemned by some authorities."

The second class of mothproofing agents consists of organic compounds carried in a petroleum or organic solvent. This would include the entire field of household insecticides of the fly spray type, but these latter can hardly be rated as mothproofing agents in the true sense of the term.

Even when thoroughly applied, Billings found that one-third of all the proprietary products examined were "lacking in mothproofing value." The chief factors influencing the value of these compounds are dry cleaning (which removes much of the repellent) and sunlight. The chemical precipitation into wool fibres, during the process of dyeing, of certain dye derivatives, is said to impart a mothproofing quality that, not being affected by washing or dry cleaning, is said to be fairly permanent. This is apparently open to question. The two products for use in the dye bath that have been recommended as giving best performance are "Demotex" and "Eulan C.N.."

In spite of the fact that most mothproofing solutions fall short of the criteria for the ideal mothproofer, this does not by any means discredit their use and value. It is hoped that those working on mothproofing methods will shed light on the problem of "what to use." In the meantime, the consumer must rely on the integrity of the manufacturers' claims or insist on a written guarantee of the same.

Under conditions of proper storage, fabrics and furniture liable to injury can be protected for extended periods of time. This brings up the question of what constitutes *proper* storage, irrespective of temperature which will be discussed later. The major requirement of a receptacle for storing fabrics is that it must be as air-tight as possible. Tightly closed and sealed paper bags are efficient,—likewise well-constructed cedar chests. Indeed, the chief value of cedar chests rests in their tight construction and not necessarily the cedar odor of the chest itself. The odor of cedar does not repel moths from depositing eggs in or on the chest, although tests by the U. S. Bureau of Entomology show that newly-hatched larvae will die in an air-tight chest the sides, ends and bottom of which are built of ¾-inch cedar heart wood. Because most containers used for storing clothing and other fabrics do not meet these specifications, and hence cannot be depended upon for extended protection, it is advisable to add paradichlorobenzene or naphthalene as an extra precaution. Due to loss by evaporation these chemicals should be replaced at least every six months.

Control of Infestations

THE FORMS of control to be discussed refer to handling infestations at hand and needless to say the preventive methods just outlined are of value in this connection.

Moth Sprays: While the standard fly sprays are widely used for moth control, many fail to meet the special requirements of a good moth spray which are:

(1) absolute freedom from staining of any kind of fabric 2) rapid evaporation; (3) freedom from fire hazard; (4) proper odor or no odor at all; (5) high toxicity to all stages of the insect and (6) high repellency value. To meet these specifications requires the selection of special oil bases and toxicants. The frequent incorporation of paradichlorobenzene or naphthalene in the spray (alone or in conjunction with other toxicants) is designed to meet the consumer's preference for "moth ball" odor.

The value of sprays is limited since, because they kill only on contact with the egg, larva or moth, they are suitable only for localized

infestations. When used for general infestations special care is required in their application. All folds and crevices of fabrics must be sprayed, using sufficient spray to penetrate to the larvae. Mere casual spraying of upholstery is unsatisfactory, for the spray fails utterly to reach the insects. When the spray liquid is used in large doses, however, so as to thoroughly impregnate the infested article, a decided residual effect can be imparted, especially when followed by occasional surface sprayings. Additional control is secured when liquid sprays are applied in closets at least twice monthly and to cracks and crevices in floors, baseboards, under carpets and other places where the insects breed.

Liquid sprays are of value in protecting piano felts from injury by moths, only if the spray is non-injurious when so used. Only products recommended for this purpose should be used.

Solid Fumigants: The extensive use of volatile chemicals that kill by fumigation, notably paradichlorobenzene and naphthalene, must be recognized in the control program. Here again their value lies in method of use. The effectiveness of these materials, like other fumigants, depends upon the building up of a lethal concentration of the toxic gas in a tightly confined space. Naphthalene releases its fumes much more slowly than paradichlorobenzene, yet the former is reputedly the more toxic,—10 to 14 times for the confused flour beetle (*Tribolium confusum*) according to Lehman. Used at the rate of two to three ounces per five cubic feet, flake naphthalene kills eggs and larvae of the webbing clothes moth (Herrick & Griswold). For practical use, one pound for each 100 cubic feet of closed space is recommended. The temperature for effective fumigation should be at least 70°F. Overstuffed furniture can be treated by sprinkling paradichlorobenzene on the floor of a tight room at the rate of 8 to 10 pounds per 1000 cubic feet for several days. This can be done in the home or, better, by furniture storage companies equipped for such work.

The popularity of para blocks or cakes for use in closets to kill clothes moths is not an accurate reflection of their real value for this purpose, although admittedly they are useful deodorants. Not only are they incapable of killing moths as ordinarily used, however, but they are of little value as repellents. Various writers (Herrick, Billings, Abbot and Billings) have contested the efficiency of paradichlorobenzene and naphthalene as moth repellents but careful tests have proved that they are of little repellent value. Thus moth balls or crystals, especially, although widely used, are of no value when placed under cushions, drawers, loose chests, closets and similar places, since the gas is quickly diffused in the outside air. The idea that the odor of these chemicals kills moths is, of course, erroneous.

In a test by the National Better Business Bureau, eight ounces of paradichlorobenzene vaporized in 84 cubic feet of a tightly sealed metal cabinet with a vacuum cleaner attachment killed all moth larvae during a three-day exposure period. Ordinarily closets are not absolutely tight and it is advisable that the housewife use the increased dosages recommended by the various vacuum cleaner manufacturers. The common practice of blowing the fumes on carpets, upholstered furniture and other exposed objects is very likely ineffectual, although the vacuum cleaner does aid in moth control by mere suction, as on floor coverings. When rugs are liberally sprinkled with crystals of naphthalene or paradichlorobenzene, lightly rolled up and wrapped in paper, sealed at the ends, moth damage will not occur.

Liquid Fumigants: For quick fumigation of infested clothing and furniture, the highly volatile liquid fumigants are indicated, but several of these are dangerous in the hands of the inexperienced or careless householder. The highly explosive carbon disulfide is excellent for fumigating boxes, chests or closets. A closet, size 4 x 5 x 7 feet, would require 1½ cups of fumigant according to Back. A mixture of ethylene dichloride and carbon tetrachloride is safer to use and as effective, but is not so readily available. Carbon tetrachloride can be used alone, but is the least effective of the liquid fumigants mentioned above.

In cases of general, severe infestations, about the only quick, sure way of control is fumigating with hydrocyanic acid, but this should be done only by licensed fumigators.

Use of High and Low Temperatures: Insects cannot live at temperatures of 135° F. or develop at temperatures of —20° F. On hot days the temperature of attics is lethal, suggesting that such places are ideal for placing infested clothing and smaller pieces of furniture. The articles should be exposed for 24 hours to several days, depending on size. If the entire house can be heated up to and maintained at not more than 135° F. for five to six hours, effective control can be obtained which will give relief from further moth trouble for at least a year.

Although insects can stand low temperatures when conditioned gradually, they die when suddenly transferred from cold to warm and back to cold. At temperatures of 40-42° F. they do not feed and hence cold storage vaults are widely used for storing furniture.

Use of Traps: Many methods of moth control are designed to *repel* moths and thus to prevent egg-laying. Based on the idea of *attracting* moths to lures or baits spread on sticky fly rolls placed on the floors (for larvae) or suspended from the ceiling (for moths) in closets and bedrooms, Wilson reported that "fairly heavy infestations can be reduced beneficially" by this method. Dried animal tissues or fish meal served as the attractant. In one home, six traps yielded 22 larvae from April 10 to August 20. Traps placed in a home reported to be infested with clothes moths yielded 165 moths from April 18 to September 15.

Program of Moth Control

BECAUSE of the popularity of liquid household insecticides it is only natural that these products should play a major role in moth prevention

(*Turn to Page* 123)

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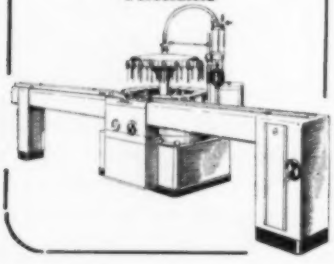

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Toxicity of ROTENONE to ANIMALS

A review and comparison of responses shown by various species of insects, fishes, birds, mammals, etc.

By L. K. Cutkomp*
Dept. of Entomology, Cornell University

IN view of the wide differences in toxicity of rotenone, derris, and cube to different species of the animal kingdom it seems important to assemble available information pertaining to these species. Studies on acute toxicity, as opposed to chronic toxicity experiments, serve best for comparative purposes, hence data on the latter type of studies, though highly informative, are mentioned only when they apply to questions under consideration.

Presentation of these data necessitates a uniform treatment of recorded values insofar as possible. Toxicity determinations for insects are usually expressed in milligrams of toxic substance per gram of body weight, while studies with mammals ordinarily list values as milligrams per kilogram, or grams per kilogram. For clarity, all comparative values will be listed in milligrams per gram of body weight, this value being equivalent to grams per kilogram. Comparisons are made principally at the point of 50 per cent mortality (M.L.D.). Pharmacologists, dealing with vertebrates, have found that the dosage by which 50 per cent of the animals die gives the most consistent data. This is termed the minimal lethal dose (M.L.D.)[35], whereas entomologists customarily apply the term median lethal dose to the 50 per cent mortality point. M.L.D. values presented are thus in agreement whether applied to insects or vertebrates. These values are used because they appear to be the best estimation of toxicity of a material at the present

*Now located at Zoological Lab., U. of Pennsylvania, Philadelphia, Pa.

TABLE 1. The oral toxicity of rotenone, derris and cube to vertebrates (as reported in the literature).

Species	Sample	% Rotenone	% Total CCl_4 Extractives	Lethal Dose (mgm./g.)	M.L.D. (mgm./g.)	No. Individuals	Reference
Guinea Pigs	Rotenone	100.0	...	0.060	0.055-0.060	34	(2)
	Rotenone	100.0	...	....	0.100-0.200	28	(32)
	Rotenone	100.0	...	....	0.012 (in olive oil)	46	(22)
	Rotenone	100.0	...	....	0.050 (3% starch paste)	46	(22)
	Derris	....	...	....	0.050-0.200	3	(12)
	Derris 4	9.6	28.5	0.075	....	21	(1)
	Cube	4.7	21.4	0.200	....	12	(1)
White Rats	Rotenone	100.0	...	0.700	0.200-1.000	35	(2)
	Rotenone	100.0	...	....	0.025 (in olive oil)	72	(22)
	Rotenone	100.0	...	....	0.050-0.075	40	(32)
	(1% dilution in ethylene glycol)						
	Derris 1	0.0	21.0	0.700	....	47	(22)
	Derris 2	3.1	17.3	0.500	....	24	(22)
	Derris 3	6.6	20.6	0.200	....	30	(22)
	Derris 4	9.6	28.5	0.100	....	26	(22)
	Cube	4.7	21.4	0.200	....	18	(22)
	Cube	4.7	19.69	....	0.170	60	(16)
Rabbits	Rotenone	100.0	...	3.000	....	28	(2)
	Derris 1	0.0	21.0	2.000	....	14	(1)
	Derris 2	3.1	17.3	1.500	....	14	(1)
	Derris 3	6.6	20.6	0.700	....	10	(1)
	Derris 4	9.6	28.5	0.600	....	83	(1)
	Cube	4.7	21.4	1.000	....	76	(1)
Dogs	Rotenone	100.0	...	....	>0.20	14	(9)
		100.0	...	....	>0.14	..	(3)
	Derris 4	9.6	28.5	0.150	....	32	(22)
Monkey	Rotenone	100.0	...	....	2 g. (wt. not given)	..	(7)
Chickens (4-wk.)	Rotenone	100.0	...	....	>0.27 (approximation)	..	(38)
	Rotenone	100.0	...	....	3.077	116	(10)
(5-day)	Rotenone	100.0	...	....	0.996	52	(10)
Pigeons	Rotenone	100.0	...	....	>0.500	..	(14)
Nestling Birds	Rotenone	100.0	...	....	0.1-0.3	135	(10)

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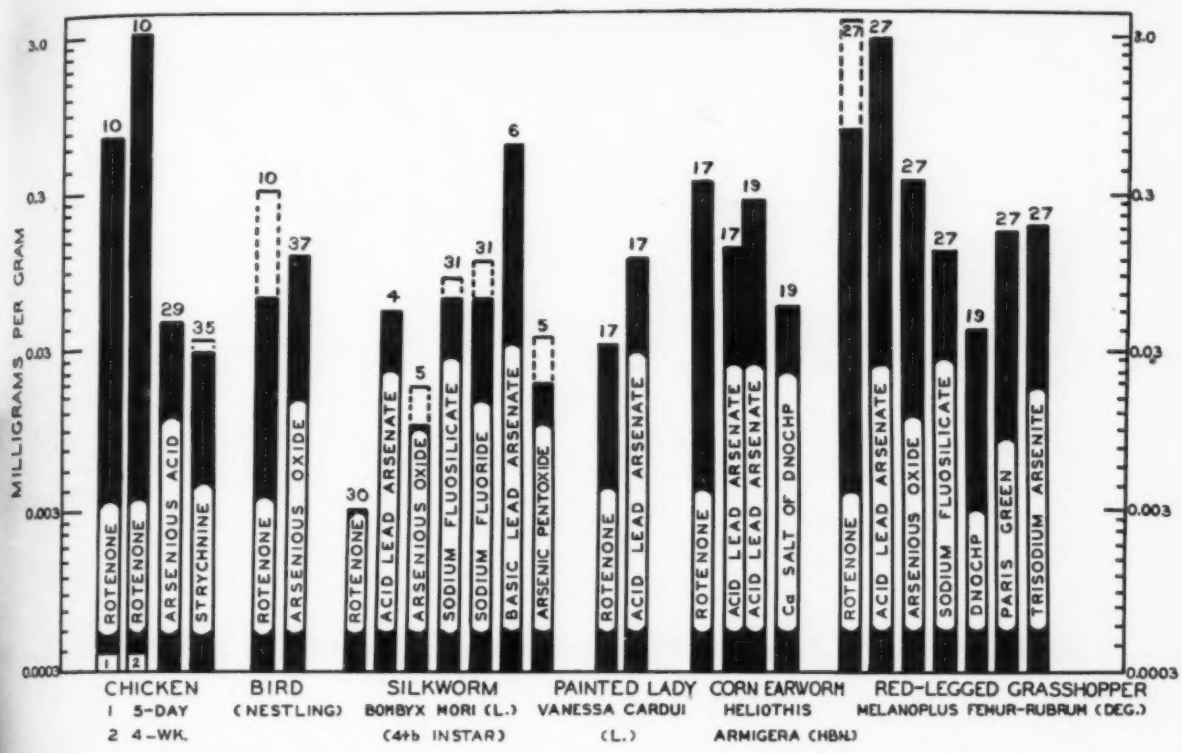

Fig. 1. The toxicity of rotenone and various poisons administered orally and expressed as the M.L.D. to chickens, nestling birds, and four insect species. Numbers refer to references consulted. DNOCHP = 2,4 dinitro-6-cyclohexylphenol

time. Test insects may weigh less than 100 milligrams whereas dogs subjected to experimentation may weigh 30 kg., or three hundred thousand times as much. Such extremes in weight may cause comparisons based upon body weight to be less reliable. At the present time, however, this is the most satisfactory method in use.

Toxicity comparisons are apt to be inaccurate when based upon different samples of rotenone-containing plants, such as derris and cube. This is due to constituents other than rotenone which play a part in the toxicity. Chemical analyses have not advanced to the point where all these substances can be determined quantitatively in samples of the plants. Even if such knowledge were available the relative action of the constituents in combination could not be evaluated. For these reasons values based upon rotenone alone, or gained from identical samples of derris or cube give more satisfactory comparisons of susceptibility and resistance in animals. This review makes no attempt to include all comparisons of derris and cube samples which cannot be supported by controlled conditions. For example, workers in the field are often well aware of differences in response existing between certain insect species. The inclusion of these observations would fill many pages. Such information need not be considered here.

It is well to consider at the outset that certain differences between insect and vertebrate responses to derris, and possibly cube samples, appear to be due to certain constituents of these roots. Roark[28] lists rotenone, levodeguelin, levoalpha-toxicarol, elliptone, sumatrol, and malaccol as compounds found in derris root. He states that only the first two "have noteworthy toxicity to insects." At least these two compounds occur in *Lonchocarpus* species possessing insecticidal value. It is known that toxicarol is highly toxic to goldfish, but low in toxicity to insects. Thus, comparisons based upon rotenone alone may be misleading when we wish to investigate the toxicity of a derris or cube sample administered to different members of the animal kingdom.

Species' Variations

Insects have been subjected to rotenone toxicity determinations more extensively than any other group of animals. For purposes of comparison with other groups it is necessary to point out only a few of the important cases. The fourth instar silkworm larva, *Bombyx mori* (L). appears to be the most susceptible organism tested, as far as oral toxicity of rotenone is concerned. The M.L.D. is 0.003 mgm. per gram.[30] Another Lepidopteran, *Vanessa cardui* (L.) has an M.L.D. of 0.03 mgm. per gram.[17] Some insects are quite resistant to rotenone. The M.L.D. of *Heliothis armigera* (Hbn.) is >0.49 as determined by the latter workers, while the red-legged grasshopper, *Melanoplus femur-rubrum* (Deg.) has an M.L.D. between 1.3 and 5.0 mgm. per gram.[27]

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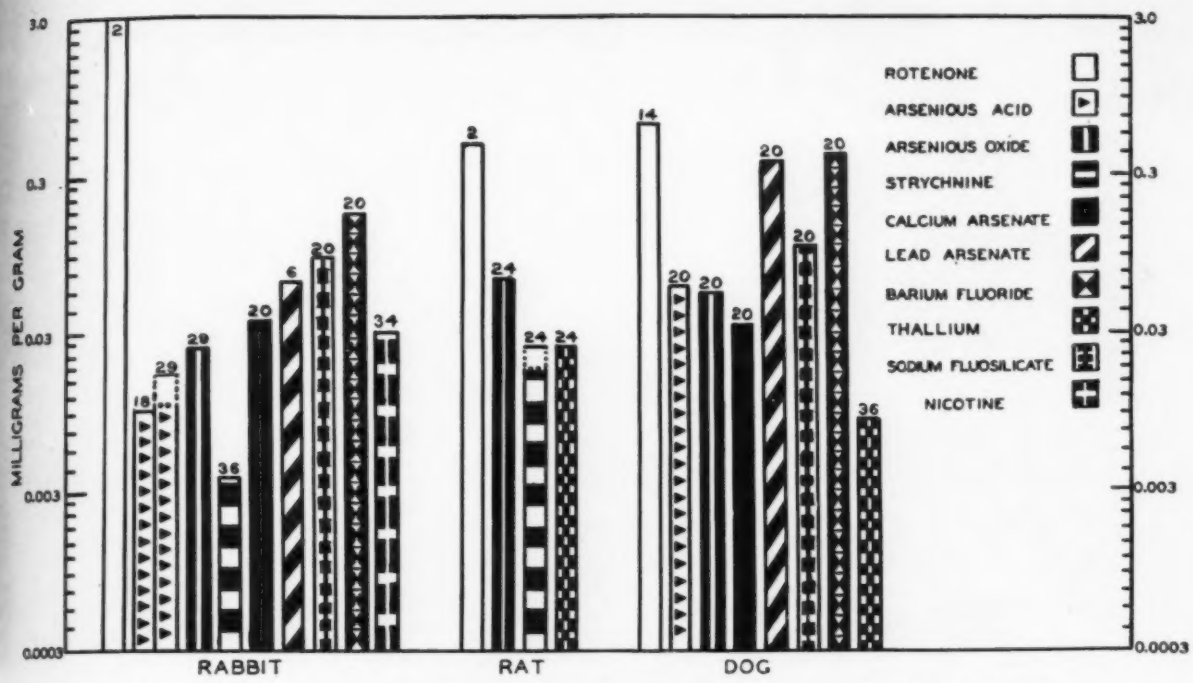


Fig. 2. The toxicity of rotenone and various poisons administered orally and expressed as the M.L.D. to three mammals, rabbits, rats, and dogs. Numbers refer to references consulted.

Among vertebrates, all members of the class *Pisces*, or fishes, subjected to tests have been shown to be very susceptible to rotenone. Few studies, however, have been made on a suitable basis for comparison with warm-blooded animals. An oral toxicity value has not been accurately determined for fish, amphibians, and reptiles. In the class *Aves*, however, certain oral determinations have been made. Haag[14] has shown that 0.5 mgm. per gram of rotenone was not fatal to adult pigeons. Cutkomp[10] has reported that chickens and pheasants, members of a lower order of birds, *Galliformes*, were quite resistant to rotenone, five-day-old chickens having an M.L.D. of 0.996, and the same age pheasants a value of 0.8 to 0.9 mgm. per gram. The four-week old birds of the same species were much more resistant, chickens having an M.L.D. of 3.077 mgm. per gram, and 30-day old pheasants an M.L.D. of 1.2 mgm. per gram. All nestling birds tested, including pigeons and mourning doves from the Order *Columbiformes*, as well as members of the Order *Passeriformes*, were quite susceptible. The M.L.D. values ranged from 0.1 to 0.3 mgm. per gram for 11 different species. Eastern yellow warbler nestlings appeared somewhat more resistant. Adult birds had a much higher M.L.D. than nestlings. The developmental stage appeared to be more important in rotenone toxicity studies with birds than actual relationships.

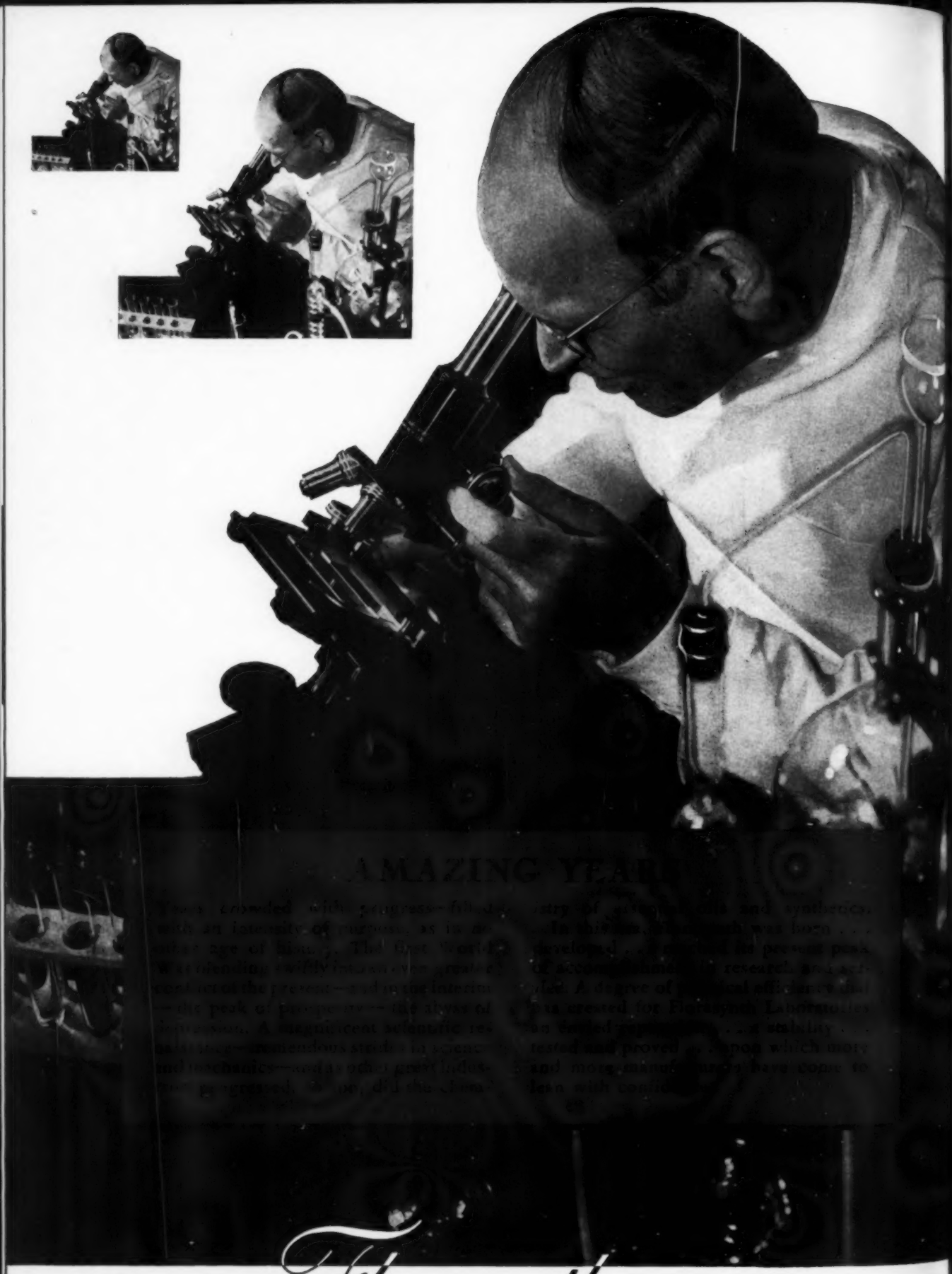
Mammals have been subjected to rotenone and derris toxicity studies by a number of workers. The guinea pig was found most susceptible of the mammals, values ranging from 0.05 and 0.055 mgm. per gram[22, 2] to 0.200 mgm. per gram reported by Shimkin and Anderson.[32] The rabbits seemed to be most resistant, the lethal dose being listed as 3.0 mgm. per gram.[2] The susceptibility of mammals remains in the same order no matter whether rotenone or derris is administered (consult table 1). From most resistant to most susceptible, the order appears to be, as a result of oral administrations, rabbits, dogs, white rats, and guinea pigs. Differences between the responses of dogs and rats to derris samples are small.

Oral administration of rotenone, derris, and cube has given responses which overlap in widely separated groups. Some insects are as resistant as birds and mammals, some birds appear much more susceptible than most mammals, but older birds are often as resistant as mammals.

Differences between toxins

It is possible to compare rotenone with other toxic substances employed. This is interesting because rotenone is generally considered to be rather ineffective against warm-blooded animals. Figures 1 and 2 present graphically some of these comparisons as taken from various sources of the literature.

Of insects, the silkworm has been subjected to a great many different toxic substances, none of which have been as effective as rotenone. *Vanessa cardui* (L.) is more susceptible to rotenone than to acid lead arsenate. *Heliothis armigera* (Hbn.), also a Lepidopteran, is generally more resistant to toxic materials, but particularly so to rotenone. Grasshoppers, members of the more primitive Orthopterans, are very resistant to rotenone as compared to many other substances. The compound 2, 4 dinitro-6-cyclohexylphenol is nearly 30 times as toxic to *Melanoplus femur-rubrum* (Deg.)



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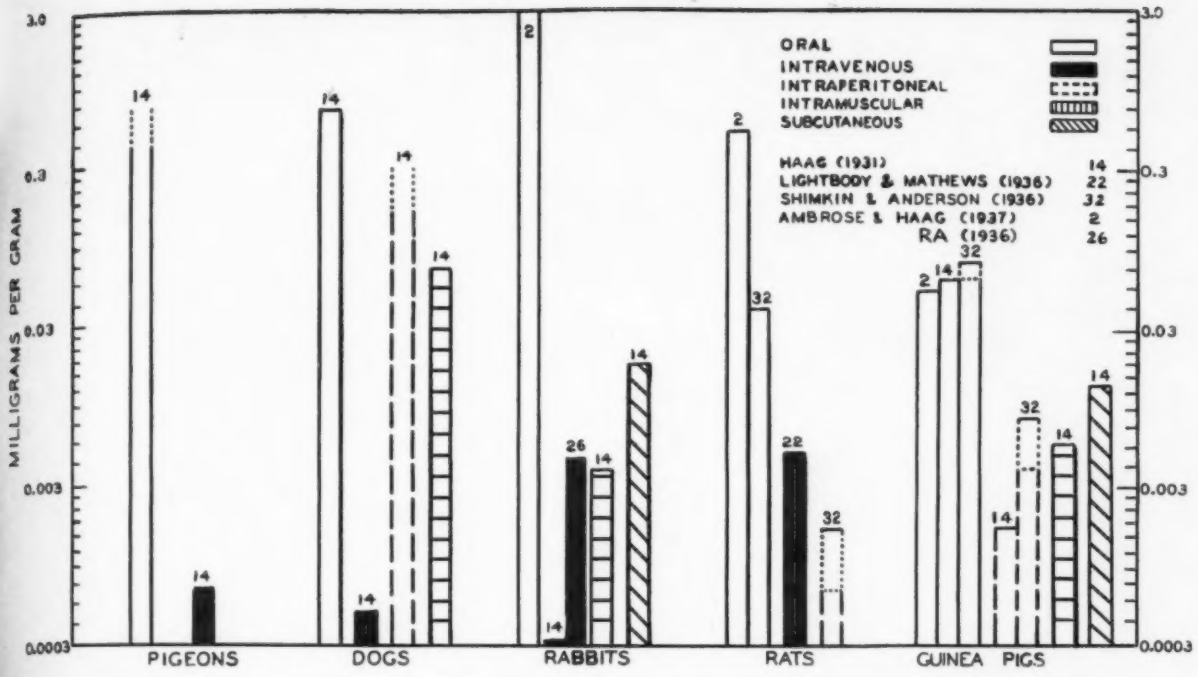

Fig. 3. The toxicity of rotenone to warm-blooded vertebrates, comparing the various methods of administration

as rotenone. Nestling birds appear to be more susceptible to rotenone than to arsenious oxide. Five-day old chickens and 4-week old chickens were much more resistant to rotenone than to arsenious acid. A similar situation exists with rabbits in that rotenone is far less toxic than any other substance used. Toxicity is also low in comparative studies with rats and dogs, although the latter species is nearly as resistant to lead arsenate and barium fluoride.

Methods other than Oral Administration

Additional comparative data have been obtained on rotenone toxicity. By consulting figure 3 the order of animals from most resistant to most susceptible may be noted. The order of responses to intravenous injections would seem likely to be rats,*** pigeons, dogs, and rabbits, with the exception of a conflicting result obtained by Ra[26] in which he reports a value of 0.005 mgm. per gram to the rabbit. Such a result would place rabbits alongside rats as being quite resistant to rotenone administered intravenously. Intraperitoneal comparisons would be dogs, guinea pigs, and rats, the latter being most susceptible. Intramuscularly, the order is dogs, guinea pigs, and rabbits; subcutaneous injections place rabbits as most resistant followed by guinea pigs and mice. Intravenous doses are reported to affect cats and dogs similarly.[14] Values determined for mice under intraperitoneal injection were 0.002 to 0.005 mgm. per gram,[32] while a subcutaneous value given by Ra[26] was remarkably low, 0.00001 mgm. per gram.**

Other comparative toxicity studies include other groups of animals. These experiments involve immersion toxicities expressed as per cent solutions. Animals include representatives from the primitive phylum *Nemathelminthes* to the class *Amphibia* of the subphylum *Vertebrata*. Table 2 presents these comparative values for rotenone, revealing that fish are by far the most susceptible organism subjected to this type of experimentation. Larvae of the mosquito, *Culex*, are the closest approach to fish as susceptible organisms. Earthworms and German cockroaches appear quite resistant.

In the absence of studies employing rotenone, consideration should be given to toxicity studies involving derris root administered to fish. Marked differences have been shown between different species of fish under these conditions. Leonard[21] and Smith[38] used materials which contained 3 and 5 per cent rotenone. The goldfish and mud minnow were found most resistant, susceptible species including the common shiner, *Notropis cornutus*, common sucker, *Catostomus commersonnii*, common sunfish, *Lepomis gibbosus*, bluegill, *Lepomis macrochira*, and the white perch, *Morone americana*. Leonard showed that two species, the golden shiner, *Notemigonus chrysoleucas chrysoleucas*, and the brook stickleback, *Eucalia inconstans* were probably more resistant than the susceptible species mentioned, but not nearly as resistant as the goldfish. The comparisons are based upon average time of death, the experimental fish receiving equal amounts of derris in the water. Results in table 2 lead one to believe that crustaceans are considerably more resistant than fish. Smith has shown that this is not always true

** Values from Ra (26) obtained from Chem. Abstracts 31: 2684, 1937. Only a German abstract of Otani's work (25) was available. Results of his work are not used for comparisons as his method of administration is not reported. His values of 0.025 mgm. per g. for dogs and 0.008 mgm. per g. for white rats do not correspond to results shown in fig. 3.

*** Rats refer to white rats, with the possible exception of values reported by Shimkin and Anderson (32) in which white rats are not specified.

in the case of derris dispersed in water. A planktonic crustacean, *Diaptomus birgei* seemed to be affected as readily as susceptible game fish, while a number of other species did not survive slightly higher doses.

General Discussion

Workers familiar with rotenone and derris toxicity studies may have gained the impression that the toxicity of these plant materials varies according to the position of the animal on the scale of classification. It is not uncommon to find workers considering rotenone as toxic to cold-blooded animals and non-toxic or comparatively safe to warm-blooded animals. These viewpoints are not strongly supported when one considers the experimental data for the various groups of animals.

Perhaps the oral administration studies give the best comparison between various warm-blooded animals and certain insects. Th silkworm, most susceptible insect, appears to be nearly 20 times as susceptible as the guinea pig, the mammal which is most easily affected by rotenone. The red-legged grasshopper, on the other hand, is as resistant as four-week old chickens, and adult rabbits and dogs. There is no evidence to show any definite correlation between the position of an organism in classification and its susceptibility or resistance to rotenone. It might be said, however, that one would expect a number of insects to be rather susceptible to rotenone whereas it is doubtful if any warm-blooded animal would be found very susceptible, that is, below a value of 0.05 mgm. rotenone per gram of body weight. The comparative toxicities by oral administration appear to be similar for derris and cube samples, although less information has been compiled with comparative samples.

Injection and immersion procedures likewise provide little information that would correlate the position of the animal in classification and its response to rotenone.

Considerations of the responses of various animals to rotenone, derris, and cube causes one to realize that the important factors controlling such responses are not likely to be found in the position of the animal in the scale of classification, but to a number of factors, chiefly physiological in nature, which act to produce variations of response by different species. It is, of course, quite conceivable that an organism of one species may respond to the same degree as an organism of a more susceptible or resistant species. Individual variations are always very evident in biological work.

Summary

A review of acute oral toxicity values of rotenone, derris, and cube to insects, birds, and mammals is given. Responses were found quite variable even within closely related animals. Results which have been obtained by various injection methods are also recorded and discussed. Immersion methods have involved other animals and responses of these organisms are presented. Differences in response cannot be correlated accurately with the classification of animals.

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(*Turn to Page* 123)

TABLE 2. Comparative toxicity studies by methods of immersion. Rotenone was administered in an aqueous suspension prepared in most cases by dissolving rotenone in a solvent such as acetone, then pouring the solution into water.

Phylum	*Class and Order*	*Species*	*Per cent solution*	*Per cent mortality*	*Reference*
Nemathelminthes	Nematoda	*Ascaris*	0.1	M.L.D.	(26)
Echinodermata	Asteroidea	*Asterias rubens*	0.001	0.0	(8)
Annelida	Oligochaeta	Earthworm	0.5	M.L.D.	(26)
Annelida	Polychaeta	*Aricia latreilli*	0.001	0.0	(8)
Annelida	Polychaeta	*Arenicola marina*	0.001	0.0	(8)
Mollusca	Gastropoda	*Littorina littorea*	0.001	0.0	(8)
Mollusca	Pelecypoda	*Cardium edule*	0.001	0.0	(8)
Arthropoda	Hexapoda, Orthoptera	*Blatella germanica*	0.4	0.0	(11)
Arthropoda	Hexapoda, Diptera	*Culex* sp.	0.000044	95.0	(11)
Arthropoda	Crustacea, Decapoda	*Carcinus maenas*	0.001	0.0	(8)
Arthropoda	Crustacea, Decapoda	*Leander serratus*	0.001	0.0	(8)
Chordata	Ascidiacea	*Ciona intestinalis*	0.001	0.0	(8)
Chordata	Pisces, Eventognathi	*Carassius auratus*	0.0000027	Lethal*	(13)
Chordata	Pisces, Pharyngognathi	*Crenilabrus melops*	0.000005	Lethal	(8)
Chordata	Pisces, Pharyngognathi	*Labrus berggylta*	0.000005	Lethal	(8)
Chordata	Amphibia, Salientia (Anura)	Frogs (adult)	0.0005	M.L.D.	(14)

* Lowest concentration reported as showing mortality; mean survival time of 13 fishes at this concentration was 375 minutes. Fish experiments are based upon survival with certain concentration-time factors. Carefully controlled time information is not available for other test animals, but above values are important for certain comparisons.

AEROSOL METHOD PATENTED

U. S. Patent 2,321,023 issued, covering method of making insecticidal aerosols with liquefied gases. Patent assigned to Secretary of Agriculture for free use of the American people.

By P. N. Annand

U. S. Department of Agriculture

ON JUNE 8, 1943, the United States Patent Office granted two employees of the Bureau of Entomology and Plant Quarantine, Agricultural Research Administration, United States Department of Agriculture, patent number 2,321,023, entitled "Method of Applying Parasiticides." Since this patent is assigned to the Secretary of Agriculture and his successors in office, the American people are assured the use of this valuable invention free from monopolistic control.

This patent describes a method of making insecticidal fogs or smokes. This method and the bomblike device with which these fogs are produced have been given much publicity lately in the form of full-page advertisements by one of the companies making and filling the metal containers and also by one of the companies making purified pyrethrum extract. As used by the armed forces, which are taking the entire output, the bomb is a steel cylinder which contains, under a pressure of about 90 pounds per square inch, a solution of pyrethrum extract and sesame oil in dichlorodifluoromethane, a commercial refrigerant known as "Freon 12." When the pressure is released by means of a valve, the contents escape into the air in the form of a very fine fog (called aerosol), which remains floating much longer than the usual kerosene-base spray. Because the droplets of pyrethrum extract dispersed in air in this way are much smaller than those dispersed by a kerosene spray, they are much more toxic to insects.

The method of dispersing insecticides by spraying solutions of them in liquefied gases was developed by L. D. Goodhue and W. N. Sullivan, of this Bureau.

The first public announcement of this invention was made at the meeting of the Eastern Branch of the American Association of Economic Entomologists in Baltimore, Md., November 14, 1941. It was there stated that pyrethrum, rotenone, and thiocyanates can be dissolved in a liquefied gas, such as dichlorodifluoromethane or methyl chloride, and released under the vapor pressure of the solvent through a nozzle similar to those used on oil burners. On December 1, 1941, R. C. Roark, in charge of the Division of Insecticide Investigations of the Bureau of Entomology and Plant Quarantine, demonstrated the device at the annual meeting of the National Association of Insecticide and Disinfectant Manufacturers in New York City. Pyrethrum extract and sesame oil dissolved in dichlorodifluoromethane were used. Since that time the invention has been described in scientific and technical articles by Goodhue, Sullivan, and associates in the following journals:

February, 1942. *Journal of Economic Entomology*, vol. 35, pages 48-51.

April, 1942. *U. S. Bureau of Entomology and Plant Quarantine*, processed publication ET-190, three pages.

April, 1942. *Journal of Economic Entomology*, vol. 35, pages 289-290.

Released in pup tents of soldiers camped in mosquito-infested areas, the new insecticidal aerosols are said to be particularly effective against malaria carrying mosquitoes which seldom bite except at twilight and during night.

December, 1942. *Industrial and Engineering Chemistry*, Industrial Edition, vol. 34, pages 1456-1459.

January, 1943. *Pests*, vol. 11, No. 1, page 12.

Additional papers on this subject are in course of publication.

U. S. Patent 2,321,023 broadly covers the method of making an aerosol by the use of a liquefied gas containing not more than 10 per cent of the material to be dispersed. Claim 1 of this patent reads as follows:

> The method of producing an aerosol comprising releasing into the atmosphere in the form of finely divided droplets a solution under pressure of not more than 10 parts of the material to be dispersed as an aerosol in not less than 90 parts of a solvent, the vapor pressure being such that the solvent will boil violently under atmospheric conditions, whereby the violent boiling of the solvent will cause the droplets to be further subdivided, so that when all of the solvent has evaporated the solute material will remain colloidally suspended in the atmosphere.

A preferred composition consists of 5 grams of purified pyrethrum extract (20 per cent total pyrethrins), 2 grams of sesame oil, and 93 grams of dichlorodifluoromethane.

Four companies are now manufacturing the steel containers, or bombs, in which the solution is kept under pressure. Three companies have succeeded in preparing a specially purified pyrethrum extract, free from wax and irritating constituents. Sesame oil is a well-known edible oil, which is expressed from sesame seeds grown in India and Mexico. Dichlorodifluoromethane (Freon 12) is in large-scale production for use as a refrigerant. There seems no reason, therefore, why this invention should not be freely available after the war.

Other solvents, such as methyl chloride, can be used in place of dichlorodifluoromethane, and other insecticides, such as rotenone, nicotine, phenoxathiin, and innumerable synthetics, can be used in place of pyrethrum. The Bureau is testing many of these combinations. An aerosol of nicotine produced by releasing a solution of it in dichlorodifluoromethane has proved twice as effective as the same quantity of nicotine applied by conventional methods. The control of insect pests by aerosols of insecticides has enormous possibilities, which the Bureau is diligently exploring.

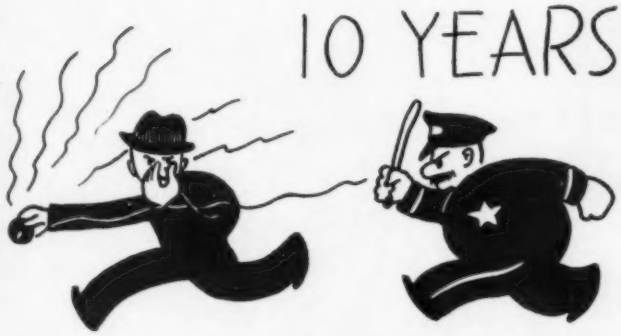
The army has voluntarily foregone use of pyrethrum base insecticides of the aerosol type other than for malarial mosquito work, and this only in field and jungle. U. S. D. A. photo illustrates application in barracks.

At the suggestion of Dr. G. L. Dunnahoo, of the U. S. Public Health Service, opportunity is here taken to correct an error that inadvertently appeared in his article in a recent issue of *Soap and Sanitary Chemicals* (vol. 19. no. 2, pages 111 and 113), in which he stated that a patent granted Goodhue and Sullivan was assigned to a large American corporation. As mentioned above, U. S. Patent 2,321,023, which broadly covers the method of making insecticidal aerosols by the use of liquefied gases, is assigned to the Secretary of Agriculture and his successors in office.

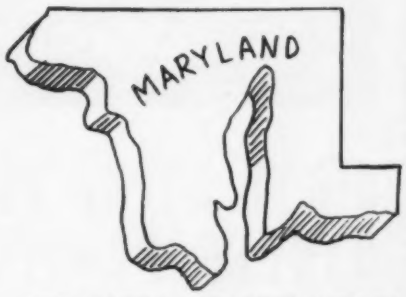
In the post-war period an important commercial market among housewives is seen for the aerosol-type insecticides. U. S. D. A. photo by Knell.

REMEMBER?

10 YEARS AGO



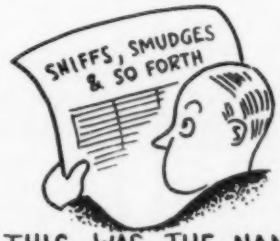
SALE OF STINK BOMBS WAS BANNED IN NEW YORK—SOME P.C.O.s DID DEODORIZING AS WELL AS EXTERMINATING IN MOVIE THEATRE UNION WARS



THE MFRS. & DISTRIBUTORS OF SANITARY CHEMICAL SPECIALTIES OF MARYLAND WAS ORGANIZED

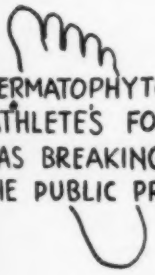
MARKET REPORT

JAPAN REPORTED SMALLER PYRETHRUM CROP — NEW YORK SPOT POWDER UP TO 30¢ LB.



THIS WAS THE NAME OF A HOUSE ORGAN STARTED BY FULD BROS.

H.M."JIM" CLARK OF DR. HESS & CLARK WAS IN THE NEWS FOR HIS NOVEL "GOLFMOBILE"



DERMATOPHYTOSIS (ATHLETE'S FOOT) WAS BREAKING INTO THE PUBLIC PRINTS

NRA CODE CONTINUED TO BE REVISED AND RE-REVISED

AN INSECT EXTERMINATING APPARATUS DEVELOPED IN FRANCE CONSISTED OF AN ULTRA-VIOLET LAMP, A SUCTION PUMP AND AN ASPHYXIATING CHAMBER

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HYDRATED 83-85% K_2CO_3
LIQUID 47-48% K_2CO_3

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CONTROL OF CLOTHES MOTHS

(*From Page 105*)

and destruction. Depending upon the ideas of the housewife as to what she considers a satisfactory spray, there are products to suit every taste and fancy. The importance of spraying in closets, under floor coverings, and in all cracks and crevices as a routine practice during cleaning, cannot be over-stated. Garments and other materials to be stored during the Winter or Summer months should first be dry cleaned, washed or otherwise rendered free from moths, then put into a box, charged with the proper amount of paradichlorobenzene or naphthalene and tightly sealed. If storage is for an extended period of time, the chemicals should be renewed at least every six months. For quick destruction of moths in clothing, heavy spraying with a "moth spray," fumigation with carbon disulfide or the above-named solid fumigants at a temperature not less than 70° F. will do the trick. Furniture can be moth-proofed, but it is better that this be done by firms equipped to do the work properly. Repeat treatments at yearly intervals may be advisable. If the treatment is not available, the article can be heavily and thoroughly sprayed at regular intervals. If known to be infested, overstuffed or upholstered furniture should be fumigated by a furniture company or by the suggested home treatments—saturation with moth spray, heat or fumigation with paradichlorobenzene.

Infestations that involve the entire household are best handled by professional hydrocyanic acid fumigation. If the expense of fumigation is prohibitive, the heat treatment or a room-by-room treatment with paradichlorobenzene or flaked naphthalene will be effective if proper amounts of the chemicals are used and the temperature is over 70° F.

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SOAP QUOTAS RAISED

(*From Page 78*)

months continued the percentage allowed for soapmaking declined, first to 84 per cent in April 1943 and then to 80 per cent in July 1943.

The outlook is brighter now, principally because the large new oilseed crops are coming in and the harvests are much greater than peace time normals. Shipping conditions, too, are improving to a considerable extent.

The additional fats and oils soon to be made available will provide an increase of 19 per cent in the overall civilian soap supply. The use of rosin and other non-fat extenders will stretch the supply another 9 per cent. They will be substituted for fats in percentages ranging from 2 to 15, depending upon the type of soap.

Rosin is a by-product of turpentine and comes from the sap of pine trees. It is in plentiful supply. Though it has been used for many years in some types of soap, chemists in recent months have been developing ways to use it more generally without reducing the cleansing quality of the finished product and for several months many of the leading brands have contained substantial percentages of it.

Volatile Fluorine Compounds

The author believes volatile inorganic fluorine compounds are too toxic to man for use as practical fumigants. Some organic volatile fluorine compounds may prove valuable. "Fluoform" is patented as a clothes-moth fumigant. The esters of fluoroacetic acid might be effective. R. C. Roark. *J. Econ. Entomol. 36,* 111-12 (1943).

TOXICITY OF ROTENONE

(*From Page 115*)

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Household Insecticide

Compounds such as 2-valeryl-1,3-indandione are used as insecticidal ingredients in compositions for killing flies, mosquitoes, moths, roaches, etc. Various admixtures may also be present. Jared H. Ford and Howard W. Eck, to Kilgore Development Corp. U. S. Patent No. 2,310,949.

Sterilizing Agent

The growth of fungi or bacteria is inhibited by the application of a sterilizing agent containing as an essential ingredient N-benzyl-maleimide. The butyl compound may also be used. L. H. Flett, to Allied Chemical & Dye Corporation. Canadian Patent No. 414,219.

Pest Control Assn. Meets Oct. 25-27

MEMBERS of the National Pest Control Association will meet at the Hotel Statler, St. Louis, October 25, 26 and 27, for a War Emergency Meeting and the 11th annual business session of the association. All individuals connected either directly or indirectly with the pest control industry are invited to attend. The program has been arranged under the direction of Morton Prescott, general chairman, with Thomas C. Raley pinch hitting for Charles Denny as local chairman. The following detailed program as received from William O. Buettner, secretary of the N.P.C.A., is subject to possible change before the time of the meeting, but offers a fairly accurate outline of the projected list of speakers and discussion subjects.

WAR EMERGENCY MEETING

and

ELEVENTH ANNUAL BUSINESS SESSION

National Pest Control Association, Inc.
Hotel Statler, St. Louis, Mo.
October 25, 26, 27, 1943

PROGRAM

Sunday Afternoon, October 24

3:00 to 5:00 P.M.—Informal reception at the home of the Thomas C. Raleys', 106 Aberdeen Place, Clayton, Mo.

6:00 P.M.—"Dutch Treat" dinner—Adam Room.

7:45 P.M.—Annual Meeting of the Board of Directors—Chairmen of all committees invited to attend—Parlor A.

9:45 P.M. — Open House — Daniel Boone Room.

Monday Morning, October 25

All sessions held in the Ball Room, Hotel Statler, 16th Floor.

8:00 to 9:15 A.M.—Registration.

9:20 A.M.—Convention called to order—Morton S. Prescott.

President's Annual Message and Report—F. E. Bohman.

Secretary's Annual Report—William O. Buettner.

Treasurer's Annual Report—Robert C. Yeager.

Memorial Service—H. K. Steckel.

Introduction of Distinguished Guests and Visitors—William O. Buettner.

"Wartime Program of the Bureau of Entomology and Plant Quarantine"—Dr. P. N. Annand.

Committee Reports — Chairmen of all committees.

Business Session.

Appointment of Committees.

F. E. BOHMAN
N.P.C.A. President

12:15 P.M.—Luncheon.

"Entomological Folklore" — Dr. L. Haseman.

Monday Afternoon, October 25

2:00 P.M. — Theme: "Pest Control and the War Effort"—Prof. J. J. Davis, presiding.

"Pest Control and the Armed Forces"—Lt. Col. F. C. Mortensen.

"What the Entomologist Can Do to Assist Commercial Pest Control Operators"—Prof. E. I. McDaniel.

"Wartime Problems of the PCO," —William O. Buettner.

"War Production Board Policies—Allocations, Priorities, etc."—Representative of WPB.

"Substitutes for Critical Insecticides."

Monday Evening, October 25

8:15 P.M.—Round Table Discussion —F. E. Bohman, presiding.

"Manpower"—Both as to the employment situation and deferments.

"Rationing"—Gasoline, tires, supplies, etc.

"Government Forms and Questionnaires."

"Priorities" — Supplies for maintenance, etc.

"Allocations" — Amplification of comments made during P.M. Session.

Tuesday Morning, October 26

9:15 A.M.—Theme: "Rodent Control" —Martin Meyer, presiding.

"The U.S. Fish & Wildlife Service Brings Us Up to Date"—F. E. Garlough.

"Research—Formulas in Wartime" —Justus C. Ward.

"Co-Operative Experiment — Chicago, Ill."—Galen C. Oderkirk and Walter S. McCloud.

12:30 P.M.—Luncheon.

"Legal Aspects of Pest Control"—John B. Edwards.

Tuesday Afternoon, October 26

2:00 P.M.—Theme: "Fumigation"—Bartlett W. Eldredge, presiding.

"Fumigation for the Armed Forces and for the Home Front"—Dr. George H. Chapman, Carl Dawson, Conrad C. Johnson and Chas. W. Houghton.

"New Developments in the Conservation of Food from Insect Attack"—Dr. Richard T. Cotton.

"Building a Successful Fumigation Service"—C. A. Vincent-Daviss.

Tuesday Evening, October 26

8:15 P.M.—Round Table Discussion — Rodent Control — Martin T. Meyer, presiding.

9:30 P.M.—Round Table Discussion — Fumigation — Bartlett W. Eldredge, presiding.

Wednesday Morning, October 27

9:15 A.M.—F. E. Bohman, presiding.

"Registration of PCO's" — B. G. Berger.

"The NPCA and Legislation"—Introduced by William O. Buettner.

"St. Louis Legislation with Reference to the PCO"—John Buxell.

"Factors Affecting Efficiency of Fly Sprays"—Prof. Roger C. Smith.

"Rogues Gallery"—"Importance of Photography in Pest Control"—Walter S. McCloud.

11:15 A.M.—Business Session

Report of Nomination Committee.
Election of Officers.

12:30 P.M.—Luncheon.

"Rat Control: A City Administration's Point of View" — Miss Frieda Schicht.

Wednesday Afternoon, October 27

2:00 P.M. — Theme: Termites and Roaches.

(a) Termite Control Clinic — Bert Lewis, presiding.

"Research Tests"—Ira Hatfield.

"Termite Control Progress" — Dr. Thomas E. Snyder.

(b) Roach Clinic — Dr. George L. Gould.

Wednesday Evening, October 27

6:30 P.M.—Banquet.

NEWS

New Sanitary Supply Co.

A new sanitary supply and appliance company—Central Chemical Co., Dallas 1, Texas—has been formed by Mike Goldberg, for twenty years secretary and treasurer of National Disinfectant Co. Offices and warehouse of the newly formed company are located at 608 Commerce St., Dallas. Mr. Goldberger reports the business has gotten off to a fine start.

Miller Starts Own Firm

J. A. Miller, Detroit, Mich., sanitary supply dealer, is now operating under the name Miller Products, handling such sanitation supplies as moth and cleaning fluid, "Touch-Up" supplies and upholstery cleaning fluids. Mr. Miller maintains his same phone number, Lenox 3150 and the same street address, 563 Marlborough.

Boyer Chemical New Quarters

Boyer Chemical Laboratories, Chicago, has purchased a three-story fireproof building at Wabash and 26th Sts., that city. When present leases expire the new property will be used for expansion of the company's soap, perfume, insecticide and disinfectant manufacturing operations, it was announced.

Bell Amer. Steel Wool Sales Mgr.

Harry E. Bell, director of sales of household products for American Steel Wool Mfg. Co., Inc., Long Island City, N. Y., has just been made general sales manager for the company.

Mayfield Hercules' Asst. Mgr.

Paul Mayfield, director of sales of the Naval Stores Department of Hercules Powder Co., Wilmington, Delaware, has been appointed assistant general manager of that department. Mr. Mayfield joined Hercules in 1926 as a chemist and has served as naval stores sales director since 1939. Originally with the company's cellulose products department, he went around the world for Hercules in 1930, specifically investigating Hercules' cellulose products and naval

PAUL MAYFIELD

stores possibilities in Australia and New Zealand. Later he was transferred to Chicago to supervise the sale of cellulose products. In 1934 he was appointed manager of the Chicago Naval stores branch office. He returned to Wilmington in 1936, as assistant director of sales for the department.

Rauses Mi Wonder Polish

A reader of *Soap & Sanitary Chemicals* is interested in locating the name of the manufacturer of a product formerly sold as "Rauses Mi Wonder" polish. Our inquirer advises that the product was originally made in Brooklyn, and that it is his understanding that the original manufacturer sold out to a Florida concern. Any information that will enable us to locate the name of the present manufacturer for him will be greatly appreciated.

Change Pyrethrum Forms

Consumers of pyrethrum will now make application to suppliers on Form WPB-2945 (formerly PD-600) and producers will use Form 2947 (formerly PD-602 instead of PD-951) the time limit on which has expired, the War Production Board announced recently. The changes have been brought about through revision of order M-179.

Gile of Watkins Dies

Ray Gile, for the past 30 years manager of the Winnipeg, Canada, branch of the J. R. Watkins Co., Winona, Minn., died September 3 in Winnipeg, from pneumonia. Mr. Gile had been associated with Watkins for 42 years. William Mitchell, former assistant manager of the Winnipeg factoy and branch, has been appointed general manager to succeed Mr. Gile. Mr. Mitchell has been connected with Watkins for the past 20 years.

United Sanitary Moves

United Sanitary Chemicals Co., dealers in janitor supplies and sanitary chemicals, Baltimore, has just moved to new quarters at 27 South Howard St. The company has purchased the new five-story elevator building in which it now makes its headquarters. It was formerly located at 400-402 W. Lombard St.

Promotion on "Berlou" Moth Spray

Stressing the importance of conserving hard to replace clothing, rugs, upholstery, etc., Berlou Mfg. Co., Marion, O., is promoting among public storage warehouses a campaign on behalf of their "Berlou" moth spray. The product is backed by a 10-year guarantee, which provides for repairing, replacing or paying the actual value of articles treated, should moth damage occur within ten years.

Seed Disinfectant

A new seed disinfectant and protectant has recently been put on the market by the Bayer-Semesan Co., a du Pont affiliate. The active ingredient of "Arasan" is an organic sulfur compound. Experimental results show that it effectively reduces losses in stands of peanuts from seed decay and that seed and soil-borne diseases of vegetables may be controlled by an inexpensive dust-treatment.

NAIDM Meets Dec. 6-7

NATIONAL Association of Insecticide & Disinfectant Manufacturers will hold its 30th annual meeting on December 6 and 7 at the Hotel New Yorker, New York. War problems, raw materials and supplies of essential sanitation products for the armed forces, will make up the greater part of the two-day business sessions and conferences. Some attention to post-war planning will also be given, according to an outline of plans by A. W. Morrison of the Socony-Vacuum Oil Co., chairman of the program committee. In view of the wartime character of the program, the meeting will be open to all manufacturers and distributors of insecticides, disinfectants, and allied products of sanitation, according to John N. Curlett of McCormick & Co., Baltimore president of N.A.I.D.M. Preceding the regular sessions, there will be a series of technical conferences, committee meetings, and a meeting of the Board of Governors on Sunday, December 5. Also handling other details of the meeting are Harold King of R. J. Prentiss & Co., John Powell of John Powell & Co., H. W. Hamilton of the White Tar Division of Koppers Co., and C. L. Weirich of the C. B. Dolge Co.

Canadian Insecticide Order

A new order of the Canadian Government covering pyrethrum and rotenone insecticides has just been issued by the Canadian Wartime Prices and Trade Board. It went into effect on September 1, freezing all stocks of these essential insecticide raw materials until released, banning all purchases and sales (except for registered products already in retail channels), and setting up a schedule of permitted future uses for such stocks as may be released. Copies of the new order may be obtained by addressing the Pesticides Administration, Room 636 Confederation Building, Ottawa, Canada.

"War on Insects" Booklet

A new booklet, "War on Insects," has just been prepared and issued by the Milk Sub-committee of the Committee for the Coordination of Entomology with the War Effort. The booklet, 16 pages chiefly of illustrations and explanatory captions, covers the control of insects and rodents in milk and dairy products production, outlining briefly accepted methods and materials of control. Dr. W. E. Dove, In Charge, Division of Insects Affecting Man and Animals, Bureau of Entomology and Plant Quarantine, and Dr. E. M. Searls, Sub-committee chairman, Department of Economic Entomology, University of Wisconsin, collaborated in preparing the booklet. Copies may be obtained from Dr. Searls at King Hall, University of Wisconsin, Madison, Wis.

Ide Heads Amer. Home Prods.

Knox Ide, who has been executive vice-president of American Home Products Corp. since January of this year, after serving as a director since 1936, has just been elected president of the organization. Walter F. Silbersack, an American Home executive for twenty years since he first joined A. S. Boyle Co. as advertising manager back in 1923, has been named executive vice-president and general manager of the corporation. Their promotions follow the election of Harry S. Howard, former American Home president, as president of Wyeth, Inc., new drug company which American Home Products has organized as a subsidiary.

Mr. Ide is 41 years old, a graduate of the University of Alabama, Class of 1923, and of Harvard Law School. He had practiced law first in Anniston, Ala., and later in New York City, up to the time of his election as a director of American Home Products Corp. in 1936. He was elected a vice-president of the firm in 1941, and executive vice-president early this year.

Mr. Silbersack attended the University of Cincinnati and was on the faculty there as assistant professor of marketing and merchandising following graduation. He joined the Cincinnati advertising firm of Procter & Collier in 1917, later moving to the Thompson Koch Co. He went with A. S. Boyle Co. as advertising manager in 1923 and had been advanced to the position of general manager when the firm was taken over by American Home Products Corp. in 1927. Mr. Silbersack was elected a director of American Home Products in 1935 and vice-president in charge of all advertised products in 1942. He is chairman of the Boyle Company and of Midway Chemical Co., and president of The Anacin Company, The Kolynos Company, and The BiSoDol Company. All are subsidiaries of American Home.

KNOX IDE

WALTER SILBERSACK

N.A.I.D.M. Plans Advertising

A schedule of cooperative advertising in a selected group of leading trade publications has been authorized by the National Association of Insecticide & Disinfectant Manufacturers, according to an announcement by H. W. Hamilton, White Tar Division of the Koppers Co., secretary. At a meeting of the Board of Governors of N.A.I.D.M. at the Statler Hotel, Washington, on Sept. 13, funds were appropriated to carry on a special advertising campaign aimed to encourage the wider use of better insecticides, disinfectants, floor waxes, cleaners, etc.

The main themes of the advertising will include, (1) conservation of food and property by prevention of insect damage (2) greater economy and labor saving by use of better quality sanitary chemicals; (3) prevention of the spread of disease; (4) essentiality of sanitation in the war effort. Industries to be covered by the advertising, which will start in October and run through February, are the general institutional fields, hospital field, food fields including dairy, cheese, canning, etc., railroads, and schools.

Issue "Gesarol-Neocid" Patent

U. S. Patent No. 2,329,074 was issued September 7 to the Geigy Company, New York, covering a new synthetic insecticidal raw material. This new material has been attracting much interest in the trade over recent months as it is the active ingredient in the Army's new louse powder formula.

The toxic ingredient in the Geigy insecticide products, which have been sold abroad under the names "Gesarol" and "Neocid," is dichlorodiphenyl-trichloroethane. As a condensation of this chemical name, it may be labeled "DDT" on sales in the United States, although some trial lots of the domestic product have received the designation "GNB-A," taken from the name, "Gesarol Neocid Base" which the product carried in Switzerland. "Gesarol" was marketed abroad as an agricultural insecticide, while "Neocid" was the product used for louse control on humans and animals.

Charles P. McCormick, president of McCormick & Co., Baltimore, accepts the Army-Navy "E" Award from Colonel Paul P. Logan at a ceremony held recently at the McCormick plant to honor the company and its employees for their important contribution to the nation's war production.

The new material is the subject of a recent bulletin of the National Pest Control Association which quotes at length from a statement made by the Bureau of Entomology and Plant Quarantine, USDA. The product is described as a white powder, practically odorless when pure, insoluble in water but readily soluble in alcohol, kerosene or other organic solvents. It is distinctly toxic to higher animals when taken by mouth and extensive toxicological studies are being made to determine its comparative safety or danger in recommended applications. Such tests are currently being made by the Bureau and results may be available shortly.

National Kill Dust Head Dies

Harry L. Siegel, founder and owner of National Kill Dust Co., New York, sanitary supplies, died September 19 at the age of 50 from a heart attack. He had operated his firm for over twenty-five years and was an important local distributor of paradichlorbenzene. The company will continue its activities without interruption. J. B. Seckler is general manager.

H. A. Goodwin In New Post

H. A. Goodwin, for the past fifteen years advertising manager, has just been appointed director of sales development for Continental Can Co., New York. In his new position, Mr. Goodwin will direct the market analysis and post war planning activities of the company. R. R. Carlier, who was assistant advertising manager, was recently made advertising manager.

Propose CS70-41 Revision

The Disinfectant Scientific and Standard Specifications Committee of the NAIDM has just recommended to the membership, following approval of the proposal at a meeting of the Board of Governors of the association in Washington, September 13, that Commercial Standard CS70-41 (phenolic disinfectant-emulsifying type) be revised to allow for use of aromatic oils derived from petroleum sources, as well as coal tar oils now permitted, in the manufacture of disinfectants covered by this specification.

It has recommended that paragraph 3 of the specification be changed to read as follows:

> It shall be made from phenols of coal tar or petroleum origin, or combination of such phenols with coal tar oils or petroleum aromatic oils containing not more than 5% unsulfonated residue and an emulsifying agent.

and that paragraph 6 be changed to read

> It shall not contain kerosene or any petroleum distillates other than phenols or aromatic oils of the quality mentioned above.

Review Pyrethrum Outlook

A REDUCED production of pyrethrum flowers at Kenya Colony, East Africa, induced by drought conditions this past Spring, and pyrethrum's use in the army's aerosol insecticide program,—have, according to a letter to its customers circulated by S. B. Penick & Co., New York drug house, resulted in a practical stoppage of pyrethrum allocations to normal peacetime users. "Other than in most exceptional cases, no exports have been permitted in over a year; pyrethrum household fly sprays have received no allocations under the present emergency and use in livestock sprays, an important use in milk production, was excluded last Spring. . . . Small quantities (25, 50 and 100 pound lots) have been granted to some pest control operators doing essential public health work, but with scrutiny as to usage and earlier allocation" says the Penick letter.

Emphasizing the tightness of the pyrethrum supply situation, the letter further states that, "the army itself has foregone the use of pyrethrum in military establishments in continental USA and even eliminated its use at basic installations abroad. The army now uses synthetic substitutes for all insect control other than malarial mosquito work and this only in field and jungle."

Apart from the small quantities mentioned for use by pest control operators in essential public health work, the other mentioned allowable use was listed by the War Food Administration Order FPO 13. It permits pyrethrum on certain essential food crops; beans, cabbage and corn, but, says the letter, "it seems the governmental agencies concerned will be obliged to further restrict this important use."

What then is the outlook? For the immediate future not too good. Although "a greater acreage is being planted and in time production is expected to increase greatly, with a resulting surplus instead of shortage, this cannot develop immediately. Pyrethrum is a two year growth, although some can be collected in the first year. Production is being stimulated in Latin America, but this likewise can give no early relief. Scarcity is to be expected for an indefinite period."

Tighten "Freon" Control

"Freon" (chlorinated hydrocarbon refrigerant), notable for its uses as the vehicle in aerosol-type insecticides, and for other essential military and civilian uses, has been placed under tighter control by the War Production Board.

Tildsley, Reilly Tar, Dies

John L. Tildsley, Jr., Chicago branch manager of Reilly Tar & Chemical Co., Indianapolis, manufacturers of coal tar products, died in Chicago on September 28, at the age of forty-four. Funeral services were held at Edgehill Church, Spuyten Duyvil, N.Y. Surviving Mr. Tildsley are his parents, living in Spuyten Duyvil, and a sister.

Hercules Advances Fred Hogg

G. Fred Hogg has just been named sales director of the Naval Stores Department of Hercules Powder Co. Mr. Hogg who was formerly manager of the Naval Stores Department's Chicago office, first joined the company in 1929 as a chemist at the Kenvil, N. J. laboratory after graduating in chemical engineering from the University of Michigan. He was made a sales and service representative of the Naval Stores Department in 1930, and in 1935 was transferred to the Chicago office, becoming manager there the following year.

FRED HOGG

"Skat" New Insect Repellent

Millions of bottles of "Skat," the new insect repellent formulated by the Skol Co., New York, are being supplied the armed forces of the United Nations. Civilians will be supplied through the J. B. Williams Co., Glastonbury, Conn. The lotion for face, hands, and other exposed surfaces contains Indalone, which is repellent to mosquitoes, most flies, chiggers, and other pests. Its effectiveness is said to range from one to four hours.

New Standard Glass Containers

Several new types, sizes and weights of standard glass containers were specified by the WPB, September 23, in Amendment No. 1 to Limitation Order L-103. The order also contains illustrations for Boston Rounds (plain round bottles) and Paste Jars (wide mouth containers). While the use of these new containers is not, at least for the time being, made compulsory in any field, the setting up of the new standards will, it is believed, encourage glass manufacturers to prepare new molds of the simplified designs so that shortly a uniform lightweight line of glass containers will be available for users of glass packages.

Philbrick on APHA Committee

Burton K. Philbrick of Skinner & Sherman, Inc., Boston, has recently been appointed as an associate referee and a member of the sub-committee on disinfectants of the American Public Health Association. Dr. C. M. Brewer of the U. S. Food and Drug Administration is the referee on chemical disinfectants. The current problems with which the committee is concerned are to discover the causes of discrepancies and inconsistent results often obtained when using the present standard disinfectant test procedure, and, if possible, how to correct this condition.

PROFESSIONAL DIRECTORY

CLASSIFIED

Classified Advertising — All classified advertisements will be charged for at the rate of ten cents per word, $2.00 minimum, except those of individuals seeking employment where the rate is five cents per word, $1.00 minimum. Address all replies to Classified Advertisements with Box Number, care of *Soap & Sanitary Chemicals,* 254 West 31st St., New York.

Positions Wanted

Chemist—man with 15 years experience with large manufacturer toilet preparations, perfumes, soaps, household specialties, desires new connection in charge Chemical Direction and Production. Particularly interested in future opportunity. Fine record, best references; minimum salary considered $5000. For further details, address Box No. 604, care *Soap & Sanitary Chemicals.*

Supt. Soapmaker and Chemist wants position. Anything in the soap line and glycerine. Address Box No. 610, care *Soap & Sanitary Chemicals.*

Salesman desires sanitary cleaning compounds for New York City. Quaranteed drawing. Address Box No. 601, care *Soap & Sanitary Chemicals.*

Manufacturers, if you have difficult formulations or wish to know whether you are complying with wartime regulations, an experienced chemist can help you. Address Box No. 606, care *Soap & Sanitary Chemicals.*

Positions Open

Wanted:—Manufacturing and research chemist for a growing and responsible company manufacturing skin cleansers for industrial workers, protective skin creams etc. Must have proven ability and experience in the soap, cleanser and cosmetic field. Good position and splendid opportunity for future. Give full details, salary, etc. in your first letter. Box No. 609, care *Soap & Sanitary Chemicals.*

Insecticide Salesmen with previous exp. selling Pyrethrum and Rotenone Insecticides. Chicago District manufacturer of popular and effective line of Pyrethrum, Rotenone and Synthetic Insecticides used by growers of field crops and Greenhouses, has excellent opp. for two good men. Give age, exp. in full detail, territory covered, minimum drawing account against salary and commission, plus reasonable traveling expenses. Address Box No. 611 care *Soap & Sanitary Chemicals.*

STATEMENT OF OWNERSHIP

Statement of the ownership, management, circulation, etc., required by the Act of Congress of August 24, 1912, and March 3, 1933, of Soap & Sanitary Chemicals, published monthly at New York, N. Y., for October 1, 1943.

State of New York, County of New York.

Before me, a Notary Public in and for the State and County aforesaid personally appeared Grant A. Dorland, who, having been duly sworn according to law, deposes and says that he is the Business Manager of Soap & Sanitary Chemicals and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, as amended by the Act of March 3, 1933, embodied in section 537, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business manager are: Publisher, MacNair-Dorland Company, Inc., 254 W. 31st St., N. Y. C.; Editor, Ira P. MacNair, 254 W. 31st St., N. Y. C.; Managing Editor, Wayne E. Dorland; Business Manager, Grant A. Dorland, 254 W. 31st St., N. Y. C.

2. That the owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding one per cent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a firm, company, or other unincorporated concern, its name and address, as well as those of each individual member, must be given.)

MacNair-Dorland Co. Inc., 254 W. 31st St., N. Y. C.; Ira P. MacNair, 254 W. 31st St., N. Y. C.; Grant A. Dorland, 254 W. 31st St. N. Y. C.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.) None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustee, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stocks, bonds, or other securities than as so stated by him.

5. That the average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the months preceding the date shown above is ——. (This information is required from daily publications only.)

GRANT A. DORLAND,
Business Manager.

Sworn to and subscribed before me this 21st day of September, 1943.

Samuel Newmark, Notary Public, Nassau County Clerk's No. 1203. New York County Clerk's No. 166. Commission expires March 30, 1944.

Wanted — Chemist, living in New York City, for parti-time work, experienced in textile and sanitary analysis. Address Box No. 600, care *Soap & Sanitary Chemicals.*

Entomologist-Chemist: Wanted man of experience to take charge of technical aspects insecticide line in household and garden field. Major merchandiser—manufacturer wishes to improve and expand small but long established phase of his business. Excellent opportunity, permanent position. Address Box No. 602, care *Soap & Sanitary Chemicals.*

Salesman Wanted—Fastest growing insecticide manufacturer in Southeast wants producer to develop Janitor Supply Department. Experienced draft deferred man with car to locate in Birmingham, Ala. Established contacts assure good income for right man on 50% net profit arrangement. Replies confidential. Address Box No. 605, care *Soap & Sanitary Chemicals.*

Wanted—Experienced man for CALIFORNIA plant to manufacture soaps, disinfectants, wax emulsions, polishes, insecticides etc. Give detailed experience, salary expected, Age, Draft Status etc. Box No. 608, care *Soap.*

Miscellaneous

Floor Brushes — We manufacture a very complete line. Catalogue sent upon request. Flour City Brush Company, Minneapolis, Minn., or Pacific Coast Brush Co., Los Angeles, Calif.

Will Purchase Immediately — Pneumatic Packaging Machine, used for chips, powder, cleanser; also dry mixers, chip dryers, crutchers, and automatic soap press. Address Box No. 612, care *Soap & Sanitary Chemicals.*

Wanted Jacketed Soap Crutcher; 400-500 Gallon Capacity; Motor Driven; 75 lb. Working Pressure. Also, Stainless Steel or Monel Jacketed Kettle with Double Agitating Blades. Write Box No. 607, care *Soap & Sanitary Chemicals.*

For Sale: 2-Houchin Aiken 4 Roll Granite Soap Mills, 18" x 30"; 4-Foot Operated Presses; Dopp Jacketed Crutcher, 1500 lb.; Powder Mills; 2-Jones Automatic Presses; 2-Package Machinery Co. Wrappers; Soap Kettles; Fillers; Labelers; Pumps; Tanks; etc. Send for bulletins. Cash buyers of your surplus equipment. Brill Equipment Company. 183 Varick St., New York 14, N. Y.

For Sale: Proctor 5 Fan, 3 Apron Conveyor Soap Chip Dryer, 2—5 Roll water cooled inclined steel roller mills, 16" dia. x 40" face; Foot Presses; 600 and 1,500 lb. Soap Frames; Cutting Tables; Plodders; 12 x 30 and 16 x 40 Three Roll Water Cooled Steel Mills; 4 Roll Stone Mills; Dryers; Chippers; Powder Fillers; Mixers; Grinders; Filter Presses; Disc Filters; Pumps, etc. Send for Soap Bulletin No. 402. We Buy Your Surplus Equipment for Cash. Stein Equipment Corp., 426 Broome Street, New York City.

Wanted—Evaporator single-effect for Glycerine. State make, condition, location, and price. Address Box No. 603, care *Soap.*

Owner of soap and sanitary chemicals plant wants partner with money, active and experienced. Write Box No. 613, care *Soap & Sanitary Chemicals.*

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Tale Ends

WORRY-of-the-month for soapers,—where are we going to get enough shipping cases to pack and ship that extra ten per cent permitted increase in soap production? Not so long ago, soapers were biting their nails to the elbow over fat supplies. But the Soap & Glycerine Unit of W.F.A., aided by nature and the Navy, did a good job on this problem. Now it's shipping cases. What next?

* * *

Wisely, the committee on waste fat salvage has resumed its advertising campaign to run for seven weeks through October 25. Although fats and oil supplies are much improved at the moment, to relax the fat salvage drive would be definitely shortsighted. Continuity is essential. Who knows what the fat situation will be six months hence?

* * *

Although ration "points-for-fats" plan has been approved in principle in Washington,—extra red meat ration tickets for those who turn in waste fats,—it continues to remain extangled in red tape making it impossible to put the plan into operation yet. And, what's more, two red points per pound of waste fat turned in by the housewife are not enough.

* * *

Experience with all non-critical material insecticide sprayers,—that is the limited number of non-metal sprayers which have come to market thus far this year,—has not been too encouraging. Thus, authorization by WPB to manufacture a million or so metal sprayers from waste metal to be available for the 1944 season is doubly welcome to the industry.

* * *

And among insecticide and disinfectant manufacturers, as among soapers, the burning question of the hour also appears to be where, when and how to get enough bottles, cartons, cases, and the like to deliver the goods to the consumer.

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